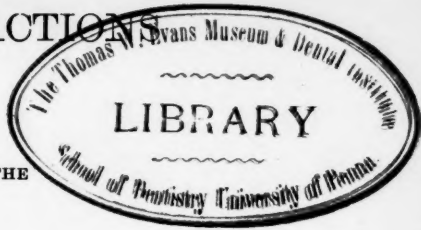


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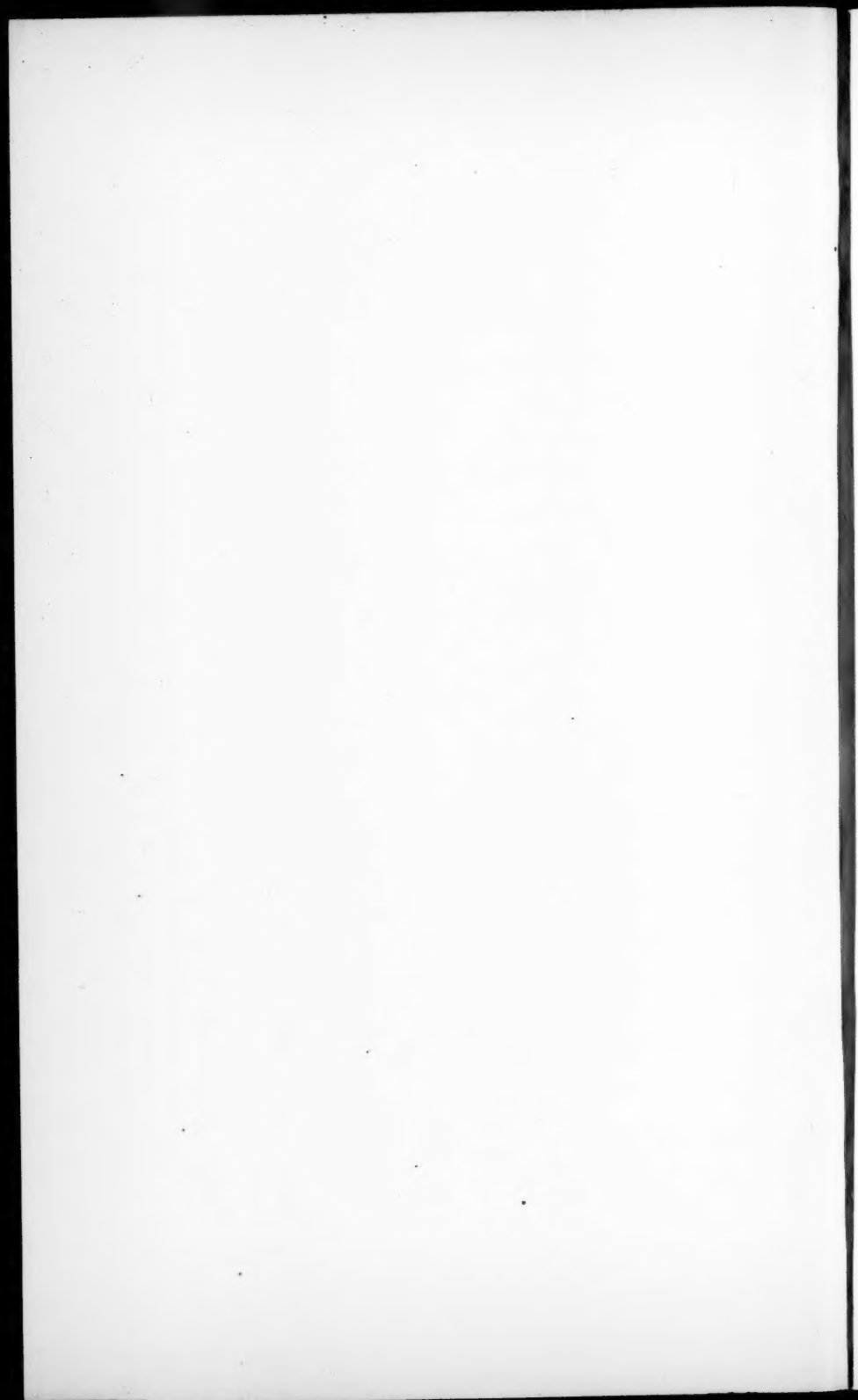
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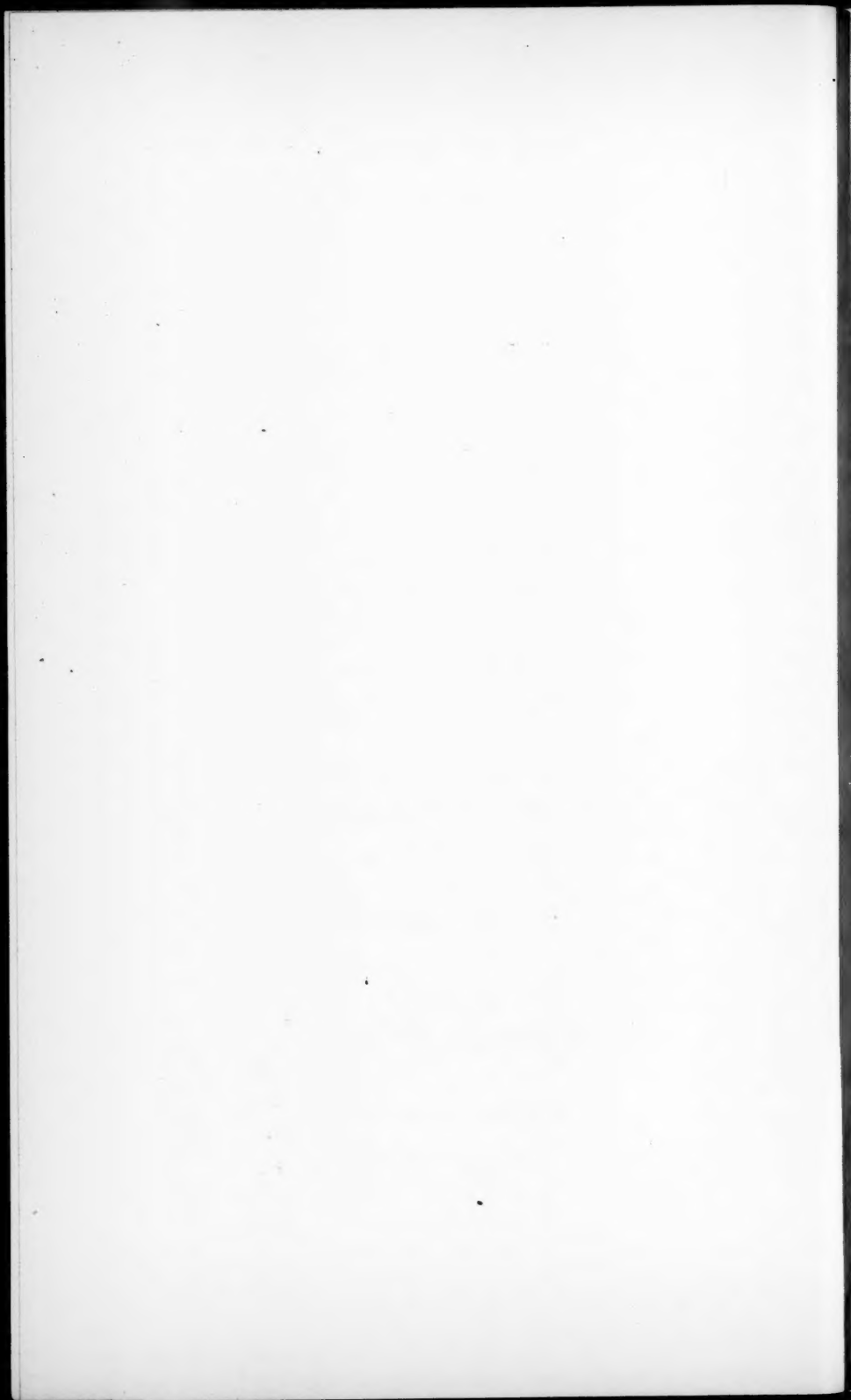
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AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, January 2, 1895, President Smith in the chair. The paper for the evening was read by Dr. James H. Daly, of Boston; subject: "The Thorough Removal of Deposits in the Successful Treatment of Pyorrhœa."

THE THOROUGH REMOVAL OF DEPOSITS IN THE SUCCESSFUL TREATMENT OF PYORRHŒA.

BY DR. JAMES H. DALY, BOSTON.

Of the vast number of teeth sacrificed every year, it is estimated that as many are lost from deposits as from caries.

That a large part of these losses might be prevented by proper treatment on the part of patient or operator, or both, goes without question. Nevertheless, when pyorrhœa exists even in a mild form, to a skilful, practiced eye it is continued and aggravated by deposits; but by far the larger number of operators do not recognize this, and stand idly by and impart the information to their patients that such cases are not curable, and that it is but a question of time when all the teeth will be lost in consequence of the existing state of things. Too true, they will be lost by just such existing facts; but if skilful and care taking cleansing were practised as faithfully as was the filling of caries on the part of the same operators, no such statement would be necessary.

The patient, too, is not altogether free from blame in the matter. In many cases, patients who willingly pay for all other work, look upon the cleansing of their teeth, an operation less pleasant to the operator than almost any other, as of such minor importance that the mass of dentists find it practically impossible to charge any-

thing like a reasonable compensation for their services. Unfortunately, we all have to consider compensation; and no operator, self-respecting, can give that conscientious attention to the case at hand that it requires unless he feels that he is to be compensated by a full appreciation or in current coin of the realm.

The presence of green stain upon the teeth is such an objectionable feature in itself, by its unsightliness, that immediate removal is requested and insisted upon by the patients; but calculi, with its insidious way of attaching itself in out-of-the-way places, infringes upon the tooth-structure in such a gradual way that it is thought to be part and parcel of tooth-substance; and not until in some accidental way a piece becomes dislodged, causing the patient to think a piece of tooth-structure has been broken away, does the mouth receive any attention as regards such deposits, and then, in a great majority of cases, in a very superficial manner.

The thorough cleansing of teeth is not the work of the student, but of the most experienced and careful operator. There is no part of our work that is more important nor where more painstaking and careful manipulation is required. The deposit of nodules of tartar upon the roots of teeth, together with certain conditions of the blood favorable to its development, will cause pyorrhœa; but it is still an open question whether the deposit is the cause or the result of the diseased condition.

Dr. Black says that it is his opinion that any irritation that causes the gum to weep serous fluid will cause this serumal calculus to be deposited.

Professor Miller gives as the cause of pyorrhœa, without any question, three factors,—a constitutional taint, a local irritant, and micro-organisms.

Dr. Ingersoll says this calculus—sanguinary is his name for it—is the result of ulceration, and that a suppurative process must precede the formation of the deposit.

Dr. Barrett takes an entirely different view, believing the serumal or sanguinary deposit to be the initial lesion. He believes it to be the result of some special stimulation of the pericemental membrane, and that the deposit is similar in origin to hypercementosis. All, however, agree that, whatever the etiology of pyorrhœa may be, the presence of deposit aggravates and continues it, and that to successfully cope with the disease, every deposit must be removed.

A well-known dentist of Boston, in conversation with me in regard to the etiology of pyorrhœa, said he did not know the cause

of it; but he did know that, given the immediate care of a child's teeth from infancy, he would promise that no pyorrhœa would be found in that mouth. The inference was that by absolute cleanliness there would be found no suitable culture-ground for the disease to take root. Wherever patients of mine have been scrupulously clean in the care of their mouth I have had no pyorrhœa to treat, but with the careless it has been a constant fight to keep it in check.

Again I say the removal of deposits is not an easy matter. Suitable instruments are required; they must be of the pushing and also of the pulling kind, and they must be kept sharp, in my opinion, and scrupulously clean. If we but follow the excellent advice and instructions given us in a previous paper read before this Academy by Dr. Potter, there will be no danger of our transmitting disease from one patient to another.

The instruments must also be of such shapes and sizes as will enable the operator to reach every surface of the teeth with little or no harm to the soft tissues, and they must also be small and delicate. By far the larger number of instruments in use by the dentists, as a whole, are much too large, and do more harm by seriously wounding tissue than good in the semi-removal of deposits.

Finally, it seems to me that a thorough instrumentation, combined with knowledge and delicate skill, cannot be urged too emphatically; for if pyorrhœa is to be dealt with in a successful manner, where deposits exist, it is of the utmost importance that they be thoroughly removed.

DISCUSSION.

Dr. Andrews.—There is one kind of nodule that may be taken for nodular tartar. It is a deposit on the tooth-root very nearly like the deposit we find in forming exostosis, and I question whether it is not directly from the blood. Perhaps I can explain by saying that calcoglobulin in the periosteum in the form of minute globular bodies is given off from the blood-vessels, and these globules are deposited in a gelatinous substance where the globules merge together. Another stage in the calcifying process hardens the mass, and a bony deposit is formed. Now, I believe that some such process takes place in the formation of a certain kind of so-called nodular tartar,—that is, I believe these calco-spherites are deposited from the periosteal tissue on the surface of the tooth at a point near the end of the root, and it is true ossification of tissue, —not really a deposit of tartar, but a formation of bone. I have

been studying the subject somewhat, and I have been surprised to see the number of these little nodules, so hard that they resemble the cementum rather than a tartar which you can scale off with an instrument. I must confess that I have as little success in treating this trouble as any I have to deal with. I think I modify the trouble, but it is seldom that I can see a certain cure. I have made a great many mouths very much better; but in the course of time they usually relapse and come for more treatment. To me it is the most puzzling of all the diseases we have to treat, and I am willing to state that I succeed less satisfactorily in this disease than in any other. I acknowledge that I do not understand it, and yet I have read almost everything that has been written upon the subject. I hope we shall get more light and information; something that will enable us to secure more definite results. I hear men make the statement that they cure this disease, but I am sorry to say that I do not have very great success in treating it.

Dr. Daly.—I do not like the idea of taking in everything that comes under the term of "pyorrhœa;" my few thoughts are not on pyorrhœa; one could write a volume about that, and I did not intend, when writing this paper, to include the whole subject. It was written simply with regard to instrumentation as an adjunct in the cure of pyorrhœa. The text-books all say "the deposits should be thoroughly removed." Well, there is a great deal in that, but the question is, how to thoroughly remove? The student in reading the text-book does not get much information, though sometimes, perhaps, it is as much as the author can give in the allotted space. I am confident that it is not an easy matter, especially with a large instrument, to remove this calcific matter, whatever it may be, and yet, in my opinion, upon this removal depends your ultimate success in the cure of the disease. I know that this is also Dr. Robinson's belief, and that he treats pyorrhœa with this thought in mind. In a case of alveolar abscess this calcific matter is often deposited at the apex of the root, and the filling of the root-canal does not cure the abscess. The pus continues to flow, (and that's all pyorrhœa is,—simply a flow of pus), and you may use carbolic acid and all sorts of things; but you will not be able to stop the pus until the tartar at the end of the root is removed, and that can only be done by instrumentation, and it takes a very fine, delicate instrument and a delicate touch to do it.

Dr. Andrews.—If a deposit was of the character that I mentioned,—what I believe to be from the calcoglobulin of the blood,—it would be almost impossible to remove it with an instrument.

They can be removed, no doubt, but it would be as hard work as to remove cementum. You would be surprised to see some of the specimens I have under the microscope; they look like little elevations of bone on the surface of the root.

President Smith.—It would be interesting to see some of the instruments which members use for the removal of deposits.

Dr. Daly.—Here are just a few, and they are what I prefer. There is a difference of opinion in regard to keeping instruments sharp. Some instructors recommend having them dull,—not dull exactly, but with a bevelled edge; not a sharp cutting edge like this.

Dr. Bradley.—Perhaps the term "right-angle edge" would express the sharpening that Dr. Daly refers to. It seems to me, in the treatment of pyorrhœa, we often do not observe satisfactory methods. For instance, we may have a pocket around one tooth where there is a marked case of pyorrhœa and the pus is exuding. We take off the tartar from that tooth, then go on working around other healthy teeth with the same instruments which we used around the diseased tooth. It is possible to convey the disease to the teeth that are not so badly affected. Therefore, we should be very careful to wash our instruments before using them on the teeth which appear to be the least affected.

Dr. Daly.—Speaking of that, I have in my mind a case now where the right superior central, right lower cuspid and first bicuspid, and left inferior cuspid were the only teeth that were suffering from pyorrhœa in the mouth, and my thought was that one should be careful in working about the other teeth, as there is a possibility that the disease could be transferred. Else why should it exist in those teeth and not affect the mouth generally?

Dr. G. T. Baker.—I am much pleased with the thoughts of the essayist, and also with the instruments that have been passed around. The only improvement that I would suggest on the instruments is that, instead of being square, they be shaped more like this glass,—that is, made with a curved surface so as to conform to the tooth. As a help to the instrument, I have lately used sulphuric acid, and I find that it dissolves all the small particles and allows them to be removed much more easily. And besides that, it acts as an astringent on the gums, and causes them to adhere to the tooth, and is a benefit in that way. I use the pure sulphuric acid, not the aromatic, making about a three-per-cent. solution, which is about as strong as a person cares to take in the mouth; and I follow it with an alkali, either soda or magnesium,

to counteract the effects of the acid. The instruments that Dr. Daly has shown are very good, and one can readily see how well adapted they are to the removal of the deposits about the anterior teeth; but what I want to see is an instrument that reaches down to the apex of the root on the distal surfaces of the molars, and enables us to get at the deposits that now seem quite impossible to reach.

Dr. Belyea.—When I first commenced practice, I had the pleasure of being associated for four months as assistant to Dr. Daly, and naturally I have used many of his methods. It was my custom, he will remember, to use peroxide of hydrogen not only in the ordinary fashion of applying it about the teeth, but also as a mouth-wash. Dr. Daly, being more conservative, perhaps, than I was, made some objections to the use of it as a mouth-wash; but I kept on, and have been using it right along, and have always been thoroughly satisfied with the result. Of course I believe in the ordinary use of the instruments, but I believe I cure more and help more than I otherwise would by the free use of peroxide of hydrogen; and I have seen no bad results from it. I do not believe that listerine does a particle of good, but rather does harm; while the peroxide not only acts as a tonic and a germ-killer, but also dissolves the tartar and makes its removal a great deal easier. I have been using for some time the Oakland Chemical Company's preparation; I like it better than Marchand's.

Dr. Daly.—Dr. Belyea said I was a little more conservative than he was, but it was simply conservatism; I always like to be on the safe side. You will notice there is sometimes quite a difference of opinion as to what it is safe to use. For instance, Dr. Baker uses a three-per-cent. solution of sulphuric acid, which he says he thinks is as strong as should be used in the mouth; now Dr. James Truman, of Philadelphia, uses a twenty-five-per-cent. solution of the chemically pure sulphuric acid, which is a pretty high solution. As we seem, by common consent, to have extended the discussion to include the entire treatment of pyorrhœa, perhaps it would be interesting to outline Dr. Truman's treatment as described by himself. In the first place, his treatment is to wash out the mouth with a solution of bichloride of mercury, one to two thousand; then, by instrumentation, to remove as thoroughly as possible all deposits; then bathe the roots with a twenty-per-cent. solution of sulphuric acid, and neutralize that by the use of bicarbonate of soda; then he packs sulphate of quinia thoroughly about the roots of the teeth. That treatment is also my treatment, with

the one exception that I use aromatic sulphuric acid instead of chemically pure. The solution used by Dr. Truman seems pretty strong, but when you use aromatic sulphuric acid you are using twenty per cent. of the drug itself; it might be called twenty-per cent. C. P.

Dr. Bradley.—May I ask if the essayist ever uses any agent to prevent pain? My own practice is to bathe the gums, before commencing to use the instruments, with cocaine; this modifies the pain of the operation considerably. I then follow with a preparation of peroxide of hydrogen, three per cent., and bichloride of mercury, one to one thousand, and generally prescribe this as a mouth-wash for the patients to use themselves. I have prescribed listerine, though less ready to do so now than formerly. I have advised the use of it in this manner: Patients, after brushing their teeth thoroughly, are to rinse out the brush and go over the teeth again. I do it to get the effect of the listerine and to enforce a more thorough cleansing of the teeth. There is one objection to the use of bichloride of mercury and peroxide of hydrogen as a mouth-wash: if it be continued long by the patients it will stain the teeth; this effect may be guarded against by the patient, as the stain can be removed without much difficulty by the application of a powder.

Dr. Briggs.—This is a very interesting subject, and it is hard to approach it without going into the whole field of pyorrhœa alveolaris, its cause, prevention, treatment, and cure. I think Dr. Daly has struck the key-note when he refers to the importance of thorough use of instruments in the treatment of this disease. When I first entered into practice, the only attempt at treatment was to scale the teeth in the ordinary manner; and my first instinct was to wander into the fields of medicine and apply something which would help to restore the gums to a healthy condition, thinking to arrest the disease in that way. Now, while I still continue to apply the medicines, I believe the foundation of the treatment is to remove the tartar with the instruments; and I do not believe—at least I have not seen it in any case in my experience, which has covered about seventeen years—that we have this disease without deposits of calcareous matter; and the cases that have been reported of pus exuding from the gums where this deposit was not present, I am not inclined to accept, because I think the observers did not explore carefully and delicately enough to find the deposit. I believe if we see the case before the disease has progressed too far that we can make cures; if it is allowed to exist too long, it

extends to the apex of the root and destroys the alveolar process, and there is no hope of saving the tooth. I have found, as Dr. Andrews has described, some deposits that simulate exostosis, and I would like to cite a case. About six weeks ago I saw a patient whom I had been treating for this trouble, and a year ago I thought I had the case under pretty good control. The patient went abroad and returned a couple of months ago and came to me with the tooth in a bad condition. I treated it to the best of my ability, but apparently without doing a particle of good, and I finally took it out. At the apex of the root, beyond where my instrument could go, I found a hard, smooth deposit. I removed this, and the tooth being in good condition, I drilled the socket a little deeper—say one sixteenth of an inch—and put the tooth back, holding it with a splint. Last Saturday the splint was removed, and I am in hopes that I will succeed in getting further service from this tooth. This deposit was entirely beyond the reach of any instrument; still I do not believe that it came there except through an original avenue, or socket or pocket, which began at the margin of the gum; and if one can get at these pockets soon enough, before they have extended very far up the root, there is no reason why one should ever lose a tooth from this disease. I might say that I use in my practice, in connection with the instruments, trichloroacetic acid, and I find it helps to remove the calcareous matter; and as for the instruments, I do not think the inventive mind of the dentist can be employed too fast or too assiduously in devising these points. We have reached the limit of the instruments which we now have, and are not able to obtain the results which we desire with them. Some of you are much more inventive than others, and there is at present nothing in the whole field of dentistry where ingenuity can be employed to better advantage than in the improvement of our instruments, that we may be enabled to reach the parts which it is necessary that we should, but which are at present without the limits of our instruments. I would like briefly to go over the treatment that I am at present using. First, wipe the gums with a twenty-per-cent. solution of cocaine, to numb them as far as possible; then cleanse the mouth with pyrozone; then, while I am getting my instruments ready, I instruct the patient to keep rinsing the mouth with the solution made by dissolving one of Seiler's tablets in a glass of water; I then wipe around carefully in the pockets with trichloroacetic acid, which I have found to be the best thing I have ever used for the softening of the tartar and the dissolution of those little fragments that cling to the root after you have re-

moved the larger portions; after this I proceed with the instruments, and I consider this the most important part of the whole treatment. I have scaled teeth until I would be sure that they were absolutely clean, and then look at them in a week and would find a number of those little dark spots, which would necessitate going over the whole field again. It is easy to be deceived in this work; for, as Dr. Andrews says, some of these spots are so smooth and hard that the instrument glides over them, and you would be sure that you had removed all the calcareous matter on the root; but as long as any little spot remains you will continue to have your pocket, and the case will never be cured. Careful work, then, with the instrument is the most important thing. After that is thoroughly done—mark you, there are many cases where, with our present instruments, it is impossible for us to remove all the deposits, and such are for the present beyond our relief—you will have no difficulty in saying that you have seen cases that have been cured. After you have removed the tartar, then, of course, comes the treatment of the pocket; and it suggests itself to you to make that aseptic; to remove all the dead tissue, which I burn off with caustic potash, and then close up the pocket by applying an astringent; and the astringent that I use is the chloride of aluminum. Of course, you can use any other astringent that you are accustomed to; but I have had such uniform success with chloride of aluminum that I am glad to recommend it. There was one other point that Dr. Banfield particularly spoke of,—that of dead pulps. There are a great many cases where the disease has gone up the root some distance,—not apparently very seriously; and yet, it has been my experience, you will find that it has affected the pulp of the tooth, and you have a complication of a dead tooth with the other mischief; and you may go on, treating the pyorrhœa indefinitely, without affecting a cure, simply because the dead pulp needs to be taken out. Other cases come to your notice before the pulp dies; and if you find with a bad case of pyorrhœa that there is any indication of pulpitis, it would be much better to remove the pulp, and thus simplify the treatment.

President Smith.—I would like to ask Dr. Briggs, in connection with this treatment, whether he now uses (I think I am right in assuming that he formerly used) sponge-grafting for the pockets—packing in sterilized sponges for the tissues to grow about?

Dr. Briggs.—I still use the sterilized sponge a great deal; I would not be without it in my practice. It is not so applicable in these cases as I would like, because one side of the pocket is bone, and

it is very hard, in that condition, to get the proper grafting into the sponge; and I find if you have a bad pocket, the best thing you can hope for is to cure and then endeavor to make the gum adhere to the tooth as best you can; you are sure to have a certain percentage of retraction of the gum about the teeth, any way. If the gum is healthy, you can, by the use of astringents, usually get a satisfactory result. If I may be allowed to digress a little, I would like to refer to the value of sponge-grafting for other things. I wish you all would use it for curing old fistulæ and as a sponge-tent for opening into an abscess; for instance, if you have opened into an abscess or down to the apex of a root that is troublesome, and succeeded in finding the cavity or track of inflammation and pus, after cleaning it out as best you can, pack in sterilized sponge, which acts as a perfect drainage tube for any further formation of pus and prevents other material from getting in; and when the tissues begin to heal the sponge becomes absorbed, as you know, like a piece of catgut. In places where the inflammation has left cavernous spaces about the roots of the tooth, I pack the sponge and it can be left there for some time without becoming offensive.

President Smith.—The reason I spoke about it was because I had tried it in one or two cases and was not so successful as I had hoped to be. There is one thing that I have not done in the past as much as I shall do in the future,—that is, after removing the deposits about the roots of the first and second molars, where the disease is advanced, you find these great, deep pockets where everything lodges. I am in the habit now of giving to my patients a solution of carbolic acid together with a syringe, with instructions to keep the pockets thoroughly clean. These pockets serve as a catch-all for the foods and secretions and greatly retards the return of the tissue to normal use; when this precautionary measure is used, the improvement is more noticeable.

Dr. Briggs.—I would like to speak of one more thing, which I think will be found to be very useful in our treatment of pyorrhœa in the future. In our improvements in local anæsthesia there are great strides being made, as you have noticed, in finding out what drugs can be used with absolute safety; and there is a most interesting paper in the last number of the *Journal of the American Medical Association* describing Schleich's method and giving the formula of an absolutely safe preparation to be used as a local anæsthetic. If this method is completely successful, I believe that we will be able to open the gums a little around the tooth, and then, packing in the sponge, force up the gum to the tooth. I have no doubt that many cases can be closed in that manner.

THE regular meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, February 6, 1895, at six o'clock, President Smith in the chair.

The paper for the evening was by Dr. R. R. Andrews, of Cambridge; subject, "A Contribution to the Study of the Structure of Dentine."

A CONTRIBUTION TO THE STUDY OF THE STRUCTURE OF THE DENTINE,—THE SO-CALLED "SHEATHS OF NEUMANN."

BY R. R. ANDREWS, A.M., D.D.S., F.R.M.S.

If we place a tooth in strong acid, within a few days it will become wholly decalcified, and there will remain only a transparent, slimy, jelly-like mass. If a portion of this be transferred to a glass slide, covered and examined under high powers of the microscope, it will be found to consist almost wholly of tangled tubes, looking like threads, crossing the field of view in every direction. These thread-like bodies are the so-called "sheaths of Neumann." We shall find among them smaller tubes of different lengths, which are probably the linings of the fibres of the cement,—the fibres of Sharpey. We shall also see small, irregular-shaped bodies, and these are the lining of the cement-corpuscles, the lacunæ of the cement. If it be a partially-formed tooth which we decalcify, we shall also find a narrow layer, which is between the formative cells and the formed dentine. In regard to these long, thread-like tubes, which we shall see later on the screen, Tomes makes the statement that they demonstrate that the tubes of the dentine have definite walls, and this is the subject-matter we are to discuss later. It demonstrates the fact that they are composed of a substance singularly indestructible, and places them, on this account, with the tissues that are found on the border-land of calcification,—a tissue composed of calcoglobulin which has been deposited in a fibrous, gelatin-like substance, first formed when a tissue is to become calcified.

I shall ask your attention to a brief view of what has been written about the tubular structure of the dentine. It is stated that Leuwenhoek, a brilliant investigator of nearly two hundred years ago, who made his many and valuable discoveries by the aid of his simple microscope, was really the first to discover the structure of the dentine. He described it as composed of little tubes.

About a hundred and sixty years afterwards the subject created considerable discussion,—thus Monro believed the teeth were longitudinally fibrous, and Fox that they were deposited in layers; Cuvier, that they were analogous to rock and fibrous; Serres says that there is nothing like fibres in them; Rousseau describes them as being longitudinally striated; and Blanding, who wrote as late as 1836, tells us that they are composed of plates situated parallel to their external surfaces. It remained for Retzius to discover and describe that there were minute tubes in dental bone, "and these are a peculiar kind of vessel, containing a nourishing and supporting fluid." Later in his work he contradicts this, saying, "the small osseous tubes contain only osseous earth." This is somewhat conflicting. How a tooth can be filled with osseous earth and yet allow the circulation of a nourishing and supporting fluid is in itself somewhat puzzling.

Recently, while reading Nasmyth's work on "Researches on the Development, Structure, and Diseases of the Teeth," I was somewhat interested in reading of a very eminent naturalist, who stated that a curious and interesting natural phenomenon took place. He made this statement: that the mouths of the vessels (tubes) which have been cut in the operation of stopping (filling a tooth) deposit a layer of calcareous matter through the tubes to the cut surface under the stopping (filling). This statement was made about 1838. And the late Robert Arthur, of Baltimore, held to this same theory. He says, in the teeth of our younger patients, the dentine possesses a power not generally known, of making an effort to protect itself from destruction. In a cut or broken surface which is kept clean, the tubes exposed become filled up with a dense, ivory-like substance, and this surface seldom decays afterwards. Tomes tells us that when we are examining a cross-section of the dentinal tubes, there will be seen around the opening of the canal, when examined by a high power, a thin yellowish border, which, he says, may be the sheath of Neumann; but, somewhat uncertain, he continues, it must be remembered that the dentinal sheaths can only be fully demonstrated by processes which amount to a partial destruction of the dentine, and that therefore they are in some degree, at all events, artificial. And it may be that they have no real existence until they are brought into existence by the action of acids. In this case, all we are entitled to say is that the immediate surroundings of the soft fibrils differ somewhat in chemical constitution from the parts of the matrix which are more remote; so that under the action of destructive agents the matrix may be split up

into sheathing layers round the fibrils and the more solid residuum of the matrix. Miller, in his work, "Micro-Organisms of the Human Mouth," holds to the tubular theory, and says that dentine may be defined as a dense, glue-giving substance, impregnated with lime-salts, and traversed by sheathed tubules radiating from the pulp-chamber. They contain living matter, and by means of their many ramifications and anastomoses form a delicate net-work, particularly on the border of the enamel. He has noticed that the sheaths of the tubules are remarkable for their great power of resistance to acids. Black, in writing of dentine, speaks very frequently of the dentinal tubules. Magitot, in 1880, doubts the accuracy of the view ordinarily accepted as to the structure of dentine, denying the existence of any special walls to the tubes (he evidently means the canals), and further argues that it is undesirable to think or speak of the channels as tubes at all. He says they are not tubes in the fresh state, seeing that the fibrils are adherent to the matrix and form a part of it, and that they were originally precisely the same tissue. The existence of sheaths as distinct from the fibrils has also been recently denied by my friend Dr. Sudduth. He says that under the superintendency of the odontoblast, lime-salts are deposited around the rod-like fibrils, and thus form tubular dentine. He repeatedly speaks of tubes in the article which he wrote for "The American System of Dentistry." We quote him as saying that if we hold that distinct and separate dental tubes exist in mature dentine, then we must consider them as having many fine branches, increasing in number as we proceed towards the periphery of the dentine. This, he tells us, is not consistent with our ideas of the character of a tube. No, the nature of dentine is very like that of mature bone. Again he says, the occurrence of interglobular spaces in dentine militates against the tubular theory. The dentinal fibrils pierce the interglobular spaces, and are continuous upon either side; while they make breaks in the continuity of the dentine tissue, yet they do not in any way interfere with the character or form of the dentinal processes. The fact that dentine is not capable of being broken up into tubes is, in his mind, conclusive evidence against the existence of a dentinal sheath, as the wall of a dentinal tube. (Here he evidently means the dentinal canal.) Bödecker, in his recent book, "The Anatomy and Pathology of the Teeth," completely ignores that tissue which investigators for years have called the "sheath of Neumann." In his description of the microscopical appearance of the dentine, he does not use the word "sheath" or "tube" at all.

He says, "The dentinal canaliculi are excavations in the basis-substance of the dentine, each containing in its centre a fibre of living matter, and not only the dental canaliculi, but the whole basis-substance of the dentine are pierced by a delicate net-work of living matter."

This is the so-called reticulum which Heitzmann thinks he has found, and which he describes in his bioplasm theory. It is probably the fibrous substructure of connective-tissue which Mummery, of London, recently described, that serves during the forming of the dentine matrix as a scaffolding upon which the gelatinous tissue and the minute spheres of calcoglobulin are deposited. I have described the same appearance in forming enamel in a paper read in Berlin in 1890. I believe this so-called reticulum to be really the scaffolding of connective-tissue fibres, which becomes calcified with the tissue, forming matrix, and not a living reticulum in the fully-formed dentine,—the living matter coming only from the fibrils within the dentinal canals and their branches, which are found throughout the dentine. What are we to understand from the different opinions expressed in the brief review I have given you? What is the definition of the word "tube?" Webster tells us it is "any long and hollow cylinder,—a pipe." A canal he describes as "a duct in the body for the passage of fluid." A duct through which anything is conducted.

If we examine a cross section of a developing tooth, where only a narrow layer of dentine has been formed, we see on the edge of the fully-calcified layer, between it and the formative cells, the transparent, hyaline layer already spoken of. It is somewhat irregular, as if it were formed by the merging of globular masses,—a transitional tissue, which a further stage in the hardening process will completely calcify. It then becomes matrix or basis-substance. It is formed by microscopic globules, calcospherites, which may be seen in the acts of transmigration from the blood-supply of the formative pulp to and within the odontoblasts. These cells appear to superintend the laying of the globules which are arranged in the substance of the gelatinous tissue, a layer of which has been formed by the pulp,—to receive them, they are deposited against the fully-calcified matrix. This is the hyaline layer already spoken of. It is a layer of border-land tissue that is singularly indestructible in acids or in caustic alkalis. I have stated in former papers that there appear to be two kinds of cells concerned in the formation of dentine; one, a fibre-forming cell, with a long process running into the canals; the other, a matrix-forming cell, the true odontoblast.

This is usually square and abrupt against the dentine, and the processes, which it appears to have, belong to the fibre cells deeper within the pulp tissue. As the dentine layer forms, the fibre of the fibre-cell lengthens, and against this lengthening fibre this same hyaline layer is formed as against the forming matrix next the formative pulp.

Professor Sudduth tells us that the thickening of the dentinal wall is accomplished by a single layer of odontoblasts which begin the process and persist throughout the life of the pulp. But we frequently see two fibre-cells merged into one, caused by the lessening circumference of the forming dentine; they have merged together, one losing its identity completely at that point. It appears to me clear that all the branching of the canaliculi must be from the merging of these fibre-cells, thus forming branches of the main fibre. The so-called sheath then is found to be a transitional tissue. It is in no sense a separate tissue, and tubes can only be demonstrated after full decalcification when acids have completely destroyed the matrix. In cross-sections of the canals in dentine this border-land tissue can be stained by a preparation of nitrate of silver. It acts precisely the same as it does on the hyaline layer of forming dentine. It stains it black. Both tissues are matrix-tissues in a partial state of calcification, and full calcification will take place in this border-land tissue, against the fibre as age comes on, when the dentinal canals are found to be much smaller in diameter than they are in the young tooth. We may assume, then, that the so-called sheath of Neumann is but a transitional tissue only partially calcified, which lines the canals in the dentinal matrix, and is only a tube or sheath when acids have destroyed its adjoining more fully calcified substance.

[The subject-matter of the paper was illustrated by some forty photo-micrographs that had been prepared by Dr. Andrews.]

DISCUSSION.

President Smith.—We have listened to a very interesting paper, and it has certainly been a great pleasure for us all to witness the beautiful slides which have been shown here to-night. The essayist of the evening referred particularly to Professor Bates. Perhaps Professor Bates will open the discussion for us.

Professor Bates.—Dr. Andrews referred to Dr. Rose's work in Germany, speaking of him as one who has done more, perhaps, than anybody else of late years in this histological work. He did not mention the fact that Dr. Rose is a practising dentist, and I might

say that the particular line of work in which he has made his investigations is in regard to the evolution of the tooth, and I suppose the work he has done in that line is, perhaps, the best that has been presented to us. He has a theory of his own concerning the evolution of the tooth which, perhaps, contradicts the theories of our American workers in that line. If you have followed the subject at all, you know what our theories of tooth evolution are. Of course the air is full of evolution nowadays. There is scarcely a magazine we pick up but contains something on the subject, and everything, particularly in the field of biology, seems to be based upon evolution, and we hear it everywhere, so that the tooth comes in for its share. Professors Cope, of Philadelphia, and Osborne, of New York, are the men who have done the most in this country bearing on this question of evolution. These gentlemen are both palæontologists and have approached the subject from the standpoint of the palæontologist.

Dr. Rose has taken the matter up in a different way; he has approached it from the standpoint of the biologist, and in his histological work he has tried to show the different stages through which the original reptilian tooth, which was the progenitor of all teeth, has changed as it has been called upon to do more severe and varied work, so that the six-cuspid mammalian tooth represents six primary cones which have merged together. Now, that theory has been treated by Professors Cope and Osborne in this country, and while they claim that this mammalian has descended from the reptilian tooth, as Dr. Rose does, at the same time they claim that this evolution has come about by the production of additional cusps on the original central reptilian cone. So, then, these are the two theories of tooth evolution which are presented to us to-day, and the great battle is being fought along these lines. The subject which Dr. Andrews has paid particular attention to, the sheath of Neumann, is, like the membrane of Nasmyth, something we really know very little about. I think Dr. Andrews has shown us to-night very clearly the existence of such a tissue, and that we cannot but feel that statements to the contrary are simply what we might expect from those men who have not had advantages equal to those of Dr. Andrews and the workers he has quoted.

President Smith.—Gentlemen, the society always listens with interest to whatever our honorary member, Professor F. W. Putnam, has to say when we have the pleasure of his company at our meetings.

Professor Putnam.—This subject is so entirely out of my line

that I do not know just how I can add to the discussion. I wish to say, however, that I have been instructed every moment while listening to Dr. Andrews, and his illustrations have exemplified the truth of a remark I made when I was last with you. I said that I thought it was necessary for a dentist to have a very delicate touch in order to amount to anything in his profession. Perhaps not all of you are familiar with the working of the microscope and the making of such sections as we have seen this evening. I have seen a good deal of that work carried on, and I know that the dissecting out of one of those little cells is an exemplification of my ideas in regard to delicacy of touch. Those of you who have done such work know how extremely careful one must be, how the least unsteadiness will destroy all your work of hours in cutting your section and then picking with a fine needle to clear the little cell which you wish to show. The sections which have been presented to us to-night must represent hours and hours of work. It is certainly very beautiful work, the making of those sections; and the sections themselves have given to us important information in regard to the formation and structure of the tooth. I have never seen anything surpassing these histological specimens. As to the subject-matter itself, that is entirely out of my line of research.

Dr. Clapp.—I would like to ask Dr. Andrews if he has discovered anything in the structure of dentine, after all the time and work he has spent to get this subject in shape, that would lead to any theory which would be of practical value to us in the treatment of sensitive dentine? Now, in decalcifying these teeth and preparing them for his slides he finds that certain things perform certain functions, and some portion of the tooth conveys sensation, and I would like to know whether, from the data he has collected and from his experience in the treatment of dead teeth, or the teeth that he works on, he has formed any theory which will be of practical benefit to us in our operations or teach us what to use in the cavity of a live tooth to reach the sensitive portions?

Dr. Andrews.—I wish I could answer that question in the affirmative. It opens up a line of thought that is likely to involve a great deal of research before anything like a satisfactory answer can be given. There is no question but that the pulp is affected by the action of acids on the dentine and by other causes, but we do not as yet know in what way. Tomes speaks of a specimen where the nerve-fibre terminations are shown over the large ends of the odontoblasts. It has never been proved that the nerve-fibres enter and go along the fibrils. It would seem as though the sensation is con-

veyed by the fibril to the pulp, but in what way is still a mystery. There is something singular to me in this fact; that in opening up a cavity in the crown of bicuspid and molars we proceed with the drilling without giving much pain, until we come to the cavity proper—a most intensely sensitive spot—somewhere between the enamel and the pulp. Well, we cut through this and we can then go deeper if need be without much sensation. Now, the question is, Why should the fibrils be so sensitive at that particular point? I have reasoned that it is the action, probably, of the acid on that softened mass, all the fibrils within it are disturbed, but when we cut through that mass we come again to the single fibrils in the normal basis-substance, and the sensation is very much less. That is the only way in which I can get any intelligent explanation of the intense sensitiveness we sometimes meet with in preparing cavities. Just how sensation is carried to the pulp I do not know, nor do I know just how to certainly obtund it from any observations that I have made.

Dr. Clapp.—In regard to sensitive dentine, I had yesterday an experience that was both interesting and provoking. The patient has complained of pain in the two right superior bicuspid on mastication. I examined the teeth, and with an exceedingly small, sharp-pointed exploring instrument I could just get it into a depression in the second bicuspid. It would not go in more than the one-hundredth part of an inch and it was as fine as a needle, but the sensation was excruciating and caused the tooth to ache for a long time. After putting on the rubber and drying out the tooth, I was enabled to get in just a little way and make a very small cavity, enough to hold a speck of gold. Now, I didn't learn anything from that operation excepting that a very small thing can be exceedingly painful. I think it was the smallest crown cavity I ever saw that was sensitive.

Dr. Andrews.—In that beautiful section of Dr. Gysi's showing the cross section of the sheaths and the same sheath in longitudinal section, all through the structure of the matrix are seen faint processes, which he calls "gelatin-yielding fibres." You remember that I spoke of a fibrous substructure on which the gelatin has been deposited before the calcoglobulin is given off from the odontoblasts. This fibrous substructure was demonstrated three or four years ago by Mummery, of London, and described and illustrated, and these appearances that are seen all through the tissue I have shown are spoken of as gelatin-yielding fibres of the dentine; not the fibrils or their ramifications. And it is a question in my mind

if, in what we call the Mummy fibres, upon which this tissue is built, there may not be a trace of gelatin left in their structure. I do not believe there is a living reticulum through the basis-substance of the dentine other than the ramifications and anastomoses of the fibril within the canaliculi.

Dr. Clapp.—Just one word more in regard to sensitive dentine. Of course, if we knew entirely the structure of dentine and all about it, we could perhaps do more than we can now to overcome its sensitiveness, but it seems to me that this sensitiveness is caused by pressure,—not by the act of cutting. I now make it a point in cutting sensitive dentine to have very sharp instruments, so that the pressure in the act of cutting may be as slight as possible.

Dr. Andrews.—This may be a little off the subject, but I would like to ask if any of the members have used glycerin and cocaine, mixed together, to allay the sensitiveness of teeth. The glycerin has the power of absorbing moisture and the cocaine would act on the fibres. I have tried it and in some cases it works very nicely.

THE regular meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, March 6, 1895, at six o'clock, President Smith in the chair.

The paper for the evening was by Dr. Frederick Bradley, of Newport, Rhode Island; subject, "Judgment an Important Factor in the Preservation of Teeth."

JUDGMENT AN IMPORTANT FACTOR IN THE PRESERVATION OF TEETH.

BY FREDERICK BRADLEY, D.M.D., NEWPORT, R. I.

The world is greatly indebted to the enthusiasts, extremists, and radicals, and, paradoxical as it may seem, the world is also greatly indebted to men of moderate views, the judicial and the conservative.

A lady from abroad, who is prominent in public affairs, recently said that when a man stands alone for his belief or ideas he is called a fanatic; when a limited number are his disciples, he is called an enthusiast; but if his belief or ideas are worthy of general acceptance, he is a hero.

Abundant proof can be furnished showing this to be true in all professions, particularly in theology and medicine. Hahnemann, who may have been looked upon as a fanatic or an enthusiast, is now held to be something of a hero by at least a part of every community, and it is generally conceded, I think, that his influence on general medicine has been, on the whole, beneficial.

While it may be said, broadly speaking, that all great reforms, and even innovations, need the enthusiasm and earnestness of the fanatic to arrest the attention of the masses, it is equally true that not every instance of fanatical, or even enthusiastic, devotion to an idea is proved in the end to be founded on true merit; and it is an excellent safeguard which the average mind of the masses interposes between the chimerical and the welfare of humanity, refusing to follow or to be led by every will-o'-the-wisp who labors under the impression that he has a mission to fill.

No doubt many of the isms which come to the front at one time or another contain the germ of some idea valuable in itself and of undoubted service when used with judgment. But, on the contrary, if it should be taken up by the extremist or radical, its real worth is frequently lost entirely, or so obscured by exaggerated claims that its period of usefulness is much curtailed.

Before applying these principles to our own profession let us look a few moments at the material which we have to work upon and the end which we hope to accomplish. In my student days I remember hearing a prominent professor make the following statement concerning the human eye: "If the modern oculist was to make as imperfect an optical instrument as the average human eye, the probabilities are his occupation would be gone; but," said he, "we must bear in mind the nature of the material from which the eye is made, how it is subject to the laws of decay and repair, and, taking all things into consideration, it is undoubtedly a good organ."

If this is true of the eye, what may be said respecting the teeth? The influence of one's ancestors, according to the laws of heredity, the large or small number of children in a family, well or poorly nourished condition, the influences of a varying diet, the occupation of the individuals, sedentary or otherwise, the care exercised in cleansing, the ever-varying condition of the saliva,—all these conditions are important factors in determining our method of procedure.

And what do we hope to accomplish? First, the relief and prevention of pain; secondly, the preservation or restoration of useful organs of mastication; thirdly, to retain or develop an attractive appearance of the mouth.

Bearing these conditions in our mind, is it not presumptuous of any dentist to claim the ability by any single special or individual method to accomplish the desired end? And yet we do hear of men becoming so wedded to an idea or a method of work that their enthusiasm leads them to ignore, and sometimes to decry, much that is good and useful, because, forsooth, it runs counter to their pet theory.

Let me go a little more into details. Is it wise for a dentist to boast that under no circumstances would he extract a tooth or advise its removal? I may be mistaken, but I do believe we may in many cases do our patients the greater service by a judicious use of the forceps. It may be in a case of regulating, or in a persistently troublesome case of pyorrhœa alveolaris, or, possibly, simply to relieve pain in stubborn cases, or in the mouths of those unable to pay for more conservative treatment, and yet we hear occasionally of some one who claims he can save all the teeth, and it is the duty of all dentists to do so. Twenty-eight teeth, or even less, in fairly good condition are preferable to thirty-two crowded and ill-conditioned teeth.

It is my privilege as an instructor to encourage students to ask

questions and think for themselves. I have been asked such a question as the following: "What is the best way to treat and fill a pulpless tooth?" "Because," said the student, "I want to know the best way, and I will do it so every time." My reply is, I know of no way that is best in all cases; that as the "punishment must fit the crime," so the remedy should be according to the diseased condition, bearing in mind the desired result,—viz., a perfectly aseptic condition of the pulp-chamber and canals and a filling in the root that will exclude moisture, and I think an experienced judgment will not always suggest the same methods or material.

A few years ago there was quite a hue-and-cry about implantation. Many demonstrations were given, papers were read describing and advocating the operation. Some of the more enthusiastic advanced such exaggerated claims for this operation that, compared with the results shown later, such claims were, to say the least, unwise. I believe there is something of value in it,—there are cases where the successful implantation of a tooth would be a consummation to be most ardently desired,—but to recommend the implantation of a few roots and the attachment thereon of extensive pieces of bridge-work certainly seems to be the dream of the fanatic.

And this brings us to the consideration of bridge-work from the stand-point of this paper. Do we not see evidences of the presence of the fanatic frequently in our own practice, and daily in the advertisements of the daily papers? That the insertion of suitable pieces of bridge-work is a legitimate undertaking, both movable and immovable, no doubt we should all agree. But should we not hesitate and make haste slowly when it comes to cutting off and grinding down good and useful teeth for the purpose of inserting what may be merely an experiment? Have not the extravagant claims of these fanatics in a measure disgusted, or at least discouraged, the more conservative, causing them to hesitate in attempting anything in this line? Here is a field for the exercise of an experienced judgment, that will carefully weigh the advantages and disadvantages impartially, and that does not look upon a difficult and complicated case as an opportunity either for experimentation or to show off the skill of the gold worker.

Possibly in the use or choice of filling-materials and the methods of manipulation do we find the most important occasions, when we should use judgment in our work. When we hear of men, prominent in the profession, who openly speak of their intention to confine themselves to the use of plastic filling-materials, and others

who think no metallic filling should be made in the teeth until the patient is upward of twenty years of age, and, on the other hand, equally prominent and conscientious men who use gold and other metals even in deciduous teeth, certainly it is not surprising that the young student should ask for some authoritative instruction as to the course he should pursue. For my own part, I believe we should be guided by the conditions presented. The indiscriminate use of gold in teeth of a poor texture, whether for children or for persons in delicate health, must undoubtedly cause much suffering, and very frequently fail to accomplish the purpose in view; and, on the other hand, to continue the use of plastic materials when the teeth are hard and of good texture seems an unnecessary waste of time, as the work will need frequent replacing.

Let me instance a case. Suppose the tooth to be of a fair quality, the patient twelve years old, the deciduous teeth gone, the six-year molars filled on grinding-surface with cement, and we find small or medium-sized cavities on the mesial surface. In such a case, would it not be better to make a gold filling on the mesial surface, because of its exposed view, and leave the cement filling on the grinding-surface till it needs further attention?

As to methods of manipulating gold, we are told by one that purely soft gold, rolled into cylinders and wedged into the cavity, is the best; another will use cohesive foil entirely, with automatic engine or electric mallet; another uses no mallet, but thinks hard pressure is the ideal method; and only recently we listened to a most interesting paper claiming that gold should be burnished into the cavity. In answer to the student who asks which is the best method, what shall we say? I think it well to advise him to become expert in each method of manipulation; and the probabilities are that nine out of ten students will not use any one method exclusively when they have been in practice five years, but a combination of two or more methods, because their experience has taught them how to work to the best advantage in saving their own strength with the minimum of discomfort to the patient.

Some time ago a dentist told me that he had not only discontinued the use of carbolic acid and creosote, but he had cleared them out of his office. Possibly these drugs may have been superseded by some others for certain purposes, yet I venture to say there are occasions where one or the other might be used to advantage. In the summer months I occasionally see a lady whose teeth are said to be in the care of a prominent Boston dentist. More than once the trouble has been with pulpless teeth, and she states, with every

confidence, that unless the canals are filled with cotton and creosote she knows they will be troublesome. Now, while I may not agree with the idea that cotton and creosote are the best to use for a root-filling, I allow the lady to have her own way, and she leaves my office free from pain and satisfied in her mind.

And right here I wish to say a few words as to accepting the suggestions of the patient. No doubt we all have patients who feel called upon to suggest little things at times, and I think we have a duty to perform in deciding aright how far we shall listen to such. Of course, if we are consulted, we very naturally expect our advice to be followed, and wherever a principle is involved we must decide for ourselves and the patient; yet there are occasions when it is well to heed the expressed preferences of the patient. I have known of a case where a young person, needing to have a tooth removed with the use of an anæsthetic, preferred cocaine to be injected; but his mother wished him to have nitrous oxide. After the operation nothing could convince the boy but he knew all the details of the operation, and I have no doubt the result would have been more satisfying to him had we used cocaine. While it should be our intention to do all our work so thoroughly that it may stand the most rigid examination, there are occasions when our judgment should indicate that we must be satisfied with doing the best we can under the circumstances, bearing in mind that all patients cannot, or will not, submit equally well to the necessary pain and fatigue generally experienced in building up show-pieces of our work.

Some time ago I was very frequently in the company of a number of young school-teachers, and I was impressed very forcibly with the idea that some of them seemed to think—or, at least, act and talk as if they thought—that the scholars in a school were sent for the purpose of supplying raw material whereon the teacher might develop or exhibit some special theory of teaching, instead of being there to acquire an education. I think we should never use our patients for such a purpose. Let us make beautiful gold fillings where suitable, make and insert crowns and bridge-work, and, when a cultivated judgment indicates it, use the plastic material for fillings. Do not be afraid to say that in our judgment such or such a course would be the best to pursue.

I know sometimes the young school-teacher would be greatly annoyed because a pupil less quick to apprehend the instruction than the average of her class interfered somewhat with the development of the pet theories; and if we treat all our patients in the

same inflexible way, we shall find that our pet theories are sometime completely overthrown.

It cannot be supposed for a moment that the various methods of operating or manipulating are the result of accident, any more than the different filling-materials came by chance, or the remedies used in our Pharmacopœia are the effects of a blunder. Much has been developed because the spur of necessity acted as an almost unfailing stimulus to progress; so let us not throw the results to one side hastily, for there is generally something of value in all processes and remedies.

To recapitulate, the usefulness of the enthusiast or radical consists largely in calling the attention of the general public to what is new, or a new use of something old. The usefulness of the moderate or conservative man is to weed out the good from the bad, and, in a measure, act as an antidote to the enthusiast.

The injury which the enthusiast may do consists in over-statement and extravagant claims, thereby leading the unwary and easily influenced astray. The injury which the conservative may do is in resisting the new because it is new, and in thinking and saying that the old ways are good enough for him.

So, in our profession, those who cultivate a fad or ride a hobby, whether it be the ignorant charlatan who wields the forceps with more zeal than discretion for the purpose of making an artificial substitute, or his opposite, who never extracts a tooth; the boastful bridge-worker, who will make a full set of teeth and fasten them to four or five roots, or the man who never attempts even to put on a crown; the renowned gold-worker, who believes in the precious metal first, last, and all the time, or his equally renowned professional brother, who never uses gold, but believes in gutta-percha and the cements,—all these should, we believe, make the exercise of judgment a prominent factor, modifying arbitrary methods and their use of materials in a cast-iron rule.

DISCUSSION.

Dr. Cooke.—I congratulate the essayist in showing good judgment in writing his paper. If a man has judgment he has something which education will not give him, and which training cannot take away from him. Information and manipulation he may acquire by patient study, but if he has not the attribute which is sometimes called "horse sense," no amount of education will put it into him. Judgment is required in other persons as well as dentists. It seems to me that patients should exercise good judgment when

they select their dentist. A certain man who lives out of town once told me that he always had his teeth cared for in the city, as he didn't have much faith in the dentist in his town. But as the local dentist was convenient he could send his children there very easily. I could not help thinking that possibly this convenience might be a cause for regret when the children grew up. Much more depends upon the care of young teeth than upon after-treatment. Parents, when they come with their children, should exercise proper judgment, and bring them at a reasonable time, and also insist on proper treatment when they do come. In some cases you cannot do much for the children, especially if they have not been trained to behave when they are at home. Some of them have been petted and allowed to have their own way, and they won't mind you any better than they do those at home, and when you get one of those hard cases the best that can be done is to carry out Dr. Stebbins's idea of taking off the rough edges of their cavities and wiping them out with nitrate of silver.

In regard to adult patients, it seems to me they should have good judgment in yielding certain points, and in their appreciation of what has been done. They come to us and there are certain things to be done; their mouths are in a very bad condition from neglect, and it takes considerable time and skill to get them into shape again, and if your charges are high very likely they go to somebody else, who reaps the benefit of the good work you have been doing for them. There is neither judgment nor justice in such cases.

In the selection of our methods, materials, and instruments, we should be very careful to get the combined judgment of the profession on any one thing before we adopt it. When amalgam first came into use it was supposed to serve the purpose just as well as gold, and was much easier to put in. Then came the reaction, and for a while it was not used at all. We had the same experience with crown-work and in the use of gold; because one piece of gold would stick to another, many tried to build up monuments on any part of a tooth. But they soon found that a structure was no stronger than its foundation, and the result was a reaction in the use of cohesive gold. Plastic fillings and bridge-work have been through the same routine, and so has copper amalgam. Our experience in all these things proves that it is best to go slow in accepting a thing merely because somebody claims to have had good success with it; the favorable experience may have been a matter

of chance. When you get the combined judgment of all, then it is safe to use a preparation or method.

One of the things which greatly tries us is the number of failures that are made in orthodontia. I know of two cases where the patients have been induced to allow the extraction of two teeth,—in one case they were the bicuspid, and in the other case the bicuspid and the first molar,—and in both cases a result was produced by which the patient was handicapped for life. It seems to me in a position of this kind a man shows very poor judgment in trying to settle everything for himself. There is no need of it where we have such friendly associations that a man can very easily obtain *sub rosa* information,—if you wish to call it that,—and the patient need not know that you have consulted anybody. We have to be very careful about consultation, for if we call another dentist in consultation the consulting dentist may get the patient, and that ends the case so far as we are concerned.

I think we see about as bad failures and evidences of misplaced confidence in the matter of bridge-work as in any line of dentistry. I remember seeing an extensive bridge which was put in by some advertisers in New York or New Haven, and it failed. Of course the patient felt very badly about it, after spending money and time on it and supposing that it was going to last a lifetime. When putting in any extensive bridge-work I have been in the habit of telling the patient that the appliance will last a certain length of time, but that eventually it will be necessary to have a plate. The bridge is simply a convenience which will put off the necessity of wearing a plate as long as possible. I saw a case where a man extracted two laterals and two centrals, more or less decayed, so that he could put in a nice bridge, running from cuspid to cuspid. You would expect that a man who had the courage to attempt such a thing as that would have the manipulative ability to do the work decently and to make an appliance that could be worn with a minimum amount of discomfort by the patient. This was a miserable failure.

There is one point which the essayist touched on with regard to the education of the dentist which I think is very important. I refer to his remarks on the necessity of trying to bring the student to think for himself. It seems to me that is one thing we have left out in our school instruction. The student may be able to answer the questions in his text-books, he may be able to manipulate well, but if he does not know just why he does a thing, the instruction he gets is not of much practical benefit when a complicated case is met.

Another place for the exercise of judgment is in the length of operations. Where patients have been subjected, as they have been in the past, to operations extending over three, four, or five hours, it is a hard strain on the mind, and brings the patient into an attitude towards the dentist that is anything but pleasant, and they remain away so long that the good result which you may have accomplished is destroyed.

It seems to me that long operations have done a great deal of harm to us as a profession, and I think that the day has gone by when a dentist should attempt a large amount of work at one sitting.

Dr. Potter.—In the use of good judgment in dental operations much depends on a thorough knowledge of the conditions under which we operate and the purposes for which we operate. We must understand the medical side of our case first of all, and then the mechanical side.

If we have this perfect knowledge we are not likely to go off in an erratic course. If we see a demonstration of a certain method, like that, for instance, which was given by Dr. Libby a short time ago with regard to burnishing gold, we do not necessarily either adopt it completely or reject it, but we are more likely to find it useful in certain parts of our work and yet not serviceable in others. I can imagine that if that demonstration was given to students, many of them would at once decide that it was either good for nothing or that it was the only way out of a difficult piece of work. The proper effect which any unusual method of practice is likely to have upon a well-educated mind is to afford certain suggestions; it will not revolutionize our work, but will help us to do it better.

Dr. C. H. Taft.—I do not understand the purport of Dr. Bradley's paper to be either that of commending or of condemning any special way of practising dentistry. A very great deal has been said in the past against copper amalgam, and in so far as it has a bearing upon the subject of the saving of teeth, I would like to take exceptions to some statements that have been made. You all know what my views are in regard to the use of amalgams. It is rarely ever that I use amalgam when I can substitute anything else as well. It seems to me that our profession shows a lack of good judgment, if we are going to use amalgam at all, in the wholesale manner in which silver alloys are used to-day and have been in the past.

I am very sure that where I have had occasion to take out one copper amalgam filling I have had to take out or patch up twenty.

five of so-called silver fillings. Since I have been away for the last two years I have not seen many of my copper amalgam fillings, but in the previous years of my practice I had the best of results with copper amalgam as a preserver of tooth-substance. I have, however, quite recently seen some of my copper amalgam fillings in the mouths of three of my patients that were inserted four or five years ago. There is absolutely no shrinkage whatever, and the teeth are in a perfect state of preservation. If we are to show good judgment in any particular way in our efforts to save teeth, and if we must save them with amalgam, I cannot for the life of me see what the objection is to copper amalgam, and I wish the gentlemen who do oppose it so strenuously would tell me wherein I fail to get satisfactory results. I certainly have had the very best results with it, and I should not be ashamed to have any of the gentlemen of this society, or of any other, see the fillings that I have inserted, and let them judge for themselves whether or no these fillings are preserving the teeth, whether there is any shrinkage or leakage, and whether they have not just as smooth a finish as any of the gold fillings that I have ever inserted. With my own experience in mind, I have always endeavored to find out wherein copper amalgam fails in the hands of so many men, and why it is that they are so constantly casting slurs upon it. I am not speaking now of what may be its injurious effects upon the general system, but rather of its utility as a filling-material.

Dr. Williams.—There is a point in regard to the fact last alluded to by Dr. Taft which would seem to indicate that proper judgment in operating would contraindicate the use of copper amalgam in the interior of a cavity in a tooth. The greatest density of a tooth, of course, is the enamel, and it would be perfectly proper to make a hard, flinty surface for grinding purposes; but to make a hard filling for the interior of the tooth, in my observation, has often proved to be destructive to the vitality of the tooth. My theory is that we should have something for the interior of the cavity that corresponds somewhat,—certainly not harder than the dentine at that part of the cavity. There is also a mistake which is very commonly made,—that is, in filling up those cavities with phosphate cements, which in a short time become very hard and rocky, no elasticity, no porosity, no free play for the natural pulsations in the circulation of the pulps, and they rebel after a while; and frequently I have found pulps destroyed from that very cause, from having too hard material in their vicinity.

Dr. Cooke.—I will try to answer Dr. Taft's question in regard to

copper amalgam. I used quite a good deal of it at one time, and for a while was strongly in favor of it, but I soon began to notice that people who had copper amalgam fillings had very sensitive teeth, and, later, I found cases where decay occurred around the copper amalgam at the cervical margin. The fillings were dished out so that you could put your instrument in between the wall of the cavity and the filling. This seems to be the testimony of nearly every one who has used copper amalgam, and Dr. Taft must have had a very peculiar experience to be so in favor of it. I have inquired at the dental depots regarding the sale of copper amalgam, and they say that where they used to sell a great deal of it the sale now is very small. I admit that I have had some cases in which the conditions seemed favorable to its use, and it appeared to preserve the tooth in a remarkable degree. I should think if Dr. Taft, holding the views that he does, desired to use any amalgam, he would prefer one of the old kinds that does not wear. How he can use copper amalgam, when there is such an evaporation of mercury from the surface all the time, I cannot understand. I should think he would be afraid that it would poison his patient.

Dr. Taft.—My experience has been just the opposite of Dr. Cooke's. I have used copper amalgam in places where the conditions seemed most trying, perhaps on the buccal surfaces of molars and bicuspsids, and in cases where the teeth were affected with white decay, and in no case that I can remember has it been necessary to do any subsequent patching about the margins of the fillings. I have been surprised in taking out copper amalgam fillings where two-thirds of the tooth, perhaps, consisted of amalgam, and where, in preparing the cavities, there had been absolutely no undercuts or retaining-points made, to see how those fillings have remained in place where no amount of force employed in the process of mastication had caused them to break away or to come out. I wish those gentlemen of the profession who are continually objecting to copper amalgam could look into the mouths of some of my patients and see the fillings that I put in several years ago. It would be the best answer in the world to these arguments that are being urged against this agent, and is, to me, good evidence that I preserved the teeth of my patients successfully with copper amalgam before I had practically discarded the employment of any sort of an amalgam as a filling-material.

Dr. Werner.—You don't use it now?

Dr. Taft.—Not when I can serve my purpose with something else.

Dr. Andrews.—How about its washing out?

Dr. Taft.—That is a thing I wanted to speak of. I have seen copper amalgam fillings that have dissolved possibly just as much as a gutta-percha or a cement filling would; or, to be more accurate, not exactly dissolve, but, rather, in course of a few months, become cup-shaped; and I believe that the cause of that is the leaving in of too much mercury. You will find that when you first mix up the amalgam it makes a glistening mass that is exceedingly moist. It is my habit to place it in a piece of chamois-skin or a napkin and squeeze out all the mercury possible. In reheating, you will express still more mercury, and after further continued heatings you will get very little out of it. When that amalgam is placed in a tooth you will have the densest kind of a filling possible, and one which will become as hard as steel. I believe if you do not squeeze out all of the mercury, then you are likely to get fillings which will possibly become cup shaped in the course of a few months, though they do not draw away from the walls of the cavity as Dr. Cooke describes.

I have also noticed that if the filling is inserted immediately after the first heating it will set very quickly, but after two or three heatings it will take half or three-quarters of a day before it sets. By taking your copper amalgam, heating and grinding it up thoroughly in a Wedgewood mortar, and manipulating it in the way I have described, you will have obtained a filling that you need not be afraid is either likely to disintegrate or fail under any condition whatever to stand the test of time.

Dr. Andrews.—There is one authority on copper amalgam fillings who says that he uses the amalgam just as it is. If he uses it just as it mixes, without squeezing out any mercury, he always has success, and if he presses out the mercury he always has failure. It merely shows the difference of opinion among different operators.

Dr. Daly.—There is one thing I have noticed about copper amalgam fillings,—those that stay entirely black are permanent ones, and those which have a polished, glistening surface are the ones that dish out. I don't know whether the black ones contain the least mercury or not.

I would like a dental definition of the word "permanent" from some of the members present. There seems to be a difference in the meaning of this word as used by different people. Some seem to imply that a gold filling is the only permanent filling, while it is claimed by others that cement is permanent because it lasts up to a certain period, and then must be renewed with another cement filling, which is permanent for another period. The term is also

used in speaking of bridge-work. The essayist spoke of putting a full denture on four teeth. I know of a case which was placed on in that way that lasted for fifteen years, and in the judgment of the operator putting them on in that manner they were "permanent." The teeth supporting the bridge were destined to have been lost at the end of fifteen years with or without a bridge (for if not by a bridge they would have been destroyed by a plate), and if the bridge was made to do service during the life of the supporting teeth, then it was a permanent denture. It was all that lay in the power of the dentist to do, and its chief value was in the fact that the patient was saved from the disagreeable features of a plate for a considerable length of time.

Dr. Werner.—Another objection to the copper amalgam is the discoloration. I am one of the fortunate ones that never used it. I have found no need of it in my practice, and a decided disinclination on the part of my patients to have copper amalgam or any amalgam put into their teeth.

If it were not for this constant lack of judgment medicine would be nearer an exact science, and dentistry would be still nearer an exact surgical and mechanical science. Is the man living that has the exact judgment and foresight to tell what is going to be the very best thing to be done in every instance? It is not possible; it is simply possible to come near it in the majority of cases. The one who puts in temporary fillings in places where he knows they will have to be soon replaced, does he use good judgment from the financial stand-point of his patients and from a scientific stand-point of his professional calling? I think he lacks good judgment, lacks skill, perhaps, and to a degree abuses the confidence the patient places in him. Many bicuspid are sacrificed every year, and in the course of three or four years the operator can see that judgment was lacking when he cut those bicuspid off. And what was the factor that induced him to do this? Perhaps lack of skill to put in a contour gold filling, or perhaps he allowed his patients to grow up with an absolute horror of an hour or an hour and a half's sitting. Too many patients have decided ideas that a dental operation must be exceedingly short, gentle, and easy, and many operators try to please them too much in that respect. That is not only bad judgment, but dishonesty to patients and a lowering of professional morals. As Dr. Cooke said, I do not believe in requiring your patient to stay in the chair for five hours,—that is much too long.

I remember a distinct case of a boy, whose deciduous molars were decayed, where I was obliged to fill cavities with cement, be-

cause his step-mother decidedly instructed the nurse who brought him that no gold should be put in his teeth. Now, those simple cavities could have been filled with gold, without the use of the rubber dam, in the same length of time that it required to put in the cement, and the fillings would have lasted until he was nine or ten years old, but the cement fillings will all need replacing before he loses the deciduous teeth. The essayist has covered almost the whole field of dentistry in the word "judgment." I am glad that our calling has enough of the surgical and the mechanical character to make nearly all our operations a success. Happily, we do not have to rely upon the uncertain action of any drug, either in large doses or in the one-hundredth or one-thousandth part of a drop. We apply surgery and mechanical art, which comes nearer to being exact than any other treatment in the medical profession.

I remember one evening I went home from a meeting of dentists with a brother member. On the way he was speaking of the virtues of copper amalgam. When we reached the corner of the street where we parted I informed him that I never used copper amalgam. He was perfectly surprised; he did not see how I could get along without it; he had saved more teeth with it than with anything he ever used. Now, his love for copper amalgam was brought about from his lack of skill in using gold, for little or no skill is required in using amalgam or the plastics. You must have a good degree of skill, a certain amount of common sense, good judgment, and a standard for honesty to do the best for our patients. You must be on the conservative side, yet at the same time listen to the enthusiast. It is the enthusiast who has brought our calling to what it is: in the skill of operating, the inventions of instruments, the ingenious devices such as bridge-work,—and who doubts the value of bridge-work? I have a distinct case in my practice where on four teeth, two upper molars and two cuspids, an entire upper denture is supported with the utmost comfort. Nothing could be more beautiful, more cleanly, more satisfactory, than this device to assist in mastication of food and in the restoring of personal comfort and appearance.

The one who simply puts in fillings, and never thinks of talking to his patients about cleanliness and the use of the brush, does not use good judgment. In addition to the cleanliness required to prevent the decay of the teeth, the gum needs the massage treatment of the tooth-brush to promote its health.

There are many other places where the dentist shows a lack of

judgment,—for instance, in not restoring to full contour approximal surfaces. We see many cases of separation,—spaces left between the teeth or flat fillings that allow food to crowd in, producing uncleanliness, inflammation, and discomfort, and, in three or four years, redecay of the teeth. Such want of skill and judgment is what has put gold operations in disrepute. A properly shaped and contoured gold filling will secure exosmosis, suction, the cleansing produced by deglutition, talking, etc., and will be of immense value in keeping the teeth clean and free from further decay. Many operators have failed because they did not know the value of full contour-work, and it is from these failures that we should learn.

Dr. Daly.—And then the question arises, Is your second judgment, after the first failure, any more successful than your first judgment, before failure? That, of course, remains to be proved.

I did not quite see the consistency in Dr. Werner's saying, in the first part of his remarks, that he did not believe in allowing patients to grow up with the idea that dental operations should be easy, gentle, and short, and then stating that he did allow a patient to influence him to make the insertion of a filling easy and short. The most influential suggestions that we receive are from our patients themselves.

What gentleman present would not rather put a gold filling in a first bicuspid, a large part of which is decayed, than an amalgam filling which the patient demands? Such fillings have not always been successful, but the patient does not usually tell the history of the filling when she goes to another dentist and presents some work that has failed. Does she say that she was the biasing element that influenced the dentist to do the work the way he did? Oh, no; she never says anything about that part of it, and so the dentist gets the blame for the failure, while the patient was at fault. Many people jump at the conclusion that Jones, Smith, or Brown has poor judgment, because they have seen a piece of work that has failed, when really the patient has been the one at fault. The mass of dentists suffer not a little from this misunderstanding of the facts in any given case. The dentist who has a particularly intelligent clientele, of course, does not suffer so much.

Dr. Werner.—It was not a lack of judgment on my part that made the case I mentioned a source of regret to me, but a positive lack of judgment on the part of the boy's mother. It would not have hurt the boy more to put in the gold fillings; it would not have taken longer, as they were the simplest crown cavities, and had they

been filled with gold there would have been no necessity for further work until the teeth were lost.

I have an admirable case that will cover the matter that Dr. Cooke spoke of,—two daughters in a family that I treated. They came to me with the shabbiest kind of dentistry. Their teeth were extremely sensitive, and they were on the brink of artificial crowns and dentures. I treated them extensively, and did the best I could for them. I wish now that I had only done one-quarter as much, for when I came to render my bill, amounting to several hundred dollars, the father was astonished and indignant, and said they had been with the previous dentist for years, and he had never charged more than fifteen dollars for one series of sittings. I had done the difficult work necessary to put their teeth in order, to save them for ten or fifteen years. The next operator will get the benefit and credit of my work, in a measure at least, and I get the blame for being unreasonably high in my charges. Now, there is a case where you might charge lack of judgment. Perhaps I was a little too enthusiastic, too conscientious in my work, yet my very best judgment told me to do all that was necessary for the preservation of the teeth; but, in the light of after-events, I would probably not have lost the patients had I done but one-third as much. Use your best judgment in each individual case, study it from all its stand-points, and do the best you can under the circumstances.

President Smith.—In the last case that Dr. Werner spoke of I think he showed good professional judgment, but a lack of business judgment. What he ought to have done in that case was to have called the father of the family to his office, told him what ought to be done, and about what it would cost; but in going ahead and doing a great deal of work to put those mouths in order, without knowing whether the fee charged would be satisfactory, he showed a lack of business judgment.

I think it is the experience of many of us that, if a patient comes from a brother dentist presenting some case which gives evidence of a lack of judgment in its treatment, and the patient makes no explanation whatever, the dentist who receives that patient feels astonished that Dr. — should do so and so. As Dr. Daly has put it, we do not know the circumstances, and should be very careful about offering any criticism. Many of us have patients in society who are up all night and sleep most of the day. They are nervous, irritable, under the care of the doctor, and constantly taking drugs. Yet their teeth must be saved. They are sensitive all over; their nervous system is entirely demoralized, and they are totally unfit

to withstand any dental operation. I had a patient in my chair to-day who is a typical example of this class of persons, and if I could charge enough to drive her out of my office I would do so; but she has never found fault with my bills, so I have to do the work, though it is exceedingly trying on my own nerves to do it. If the teeth were of good texture I could separate the molars and bicuspid and put in contour fillings, and they would last during her lifetime. But all I can do with this patient is simply to excavate decay, and, on account of the sensitiveness of the dentine and the nervousness of the patient, it is a most difficult task with the sharpest burs, with all the obtundents and greatest care, and I am obliged to spend two hours where I should spend one. Now, in that case I have put in gutta-percha fillings, and in some cases built those teeth right together solid, and they have been kept along for years in that way. Who can do better under such circumstances? Could better judgment be shown in the treatment of those teeth? I have had patients who, after a long struggle, have finally made up their minds to submit to an operation of two and one-half hours and have a contour gold filling put in; then, after that, there would be a collapse, a reaction, and the question confronts us, Is it good judgment to put those patients through such a course as that? Have we any right to ask our patients to undergo treatment that disturbs their vitality for the sake of the preservation of their teeth with gold? We must govern our judgment by the patients and the conditions which we meet.

I was amused as well as instructed in reading an article by Dr. Perry in the last INTERNATIONAL DENTAL JOURNAL. He spoke of seeing a large gold filling in a bicuspid that was somewhat top-heavy with its gold. He said that filling, put in in such a way on such a tooth, could not last more than two years, or three at the most, and then he says, "How much better judgment it would have been to put in a cement filling;" and this is the part that amused me, because the title of his paper was "Moderation in Practice and in Statement." How much better judgment it would have been to have put in a cement filling, which would only have taken ten minutes, and could be replaced whenever necessary at an expenditure of five minutes more. If Dr. Perry can properly excavate, dry, and put in a cement filling in ten minutes, he can do much better than I can.

Regarding the matter which the essayist referred to, and which has been touched upon by Dr. Daly, about the suggestions of patients, I think we *are* governed somewhat by the suggestions of

patients, but at the same time I think there should be a limit to it. Now, I have heard men make the statement that they would not listen to any dictation from their patients,—if the patient did not think that what they proposed to do for them was just what they wanted done, then they could go somewhere else. I think that is a radical statement, because if you have patients who are treated by homœopathic physicians, and from those physicians receive the idea and thoroughly believe that an amalgam filling is injurious, it is absurd for a dentist to insist on either putting amalgam into their teeth or nothing at all. He can preserve teeth temporarily with gutta-percha or cement, and if they have to be repaired every three or four months, that is their lookout. You can tell them that amalgam is the very best thing you can use under the circumstances, and if they say, "I object to amalgam on account of its being injurious," you have no need to endorse that judgment, but go ahead and use the material which will best serve the purpose, amalgam excluded. I think it is perfectly proper to waive your point under such circumstances as those, but when it comes to a case of a woman demanding that an entire gold crown be put on a first bicuspid, with a diamond set in, as I have seen done, then I say it is time for the dentist to stand on his dignity and say, "I will not do it," and let that patient go if she chooses. There is a case in my practice that is a good illustration of what may result from accepting of suggestions from patients. A lady went to a certain dentist in this city, and in the course of his work he found that the pulp in one of her teeth was dead, and he decided to remove it. As he was drilling into the pulp-chamber the patient stopped him and said, "Here, I know a friend who had a tooth ruined by having it drilled into." The patient was of a good family and very positive in her opinions, and so the dentist listened to her arguments and temporized with the tooth. He knew better, because he is a good dentist, but still he did not want to offend the patient by insisting on doing what he knew to be right. He had not removed the pulp from the pulp-chamber when he was told to stop, and he gave the tooth the best treatment he could under the circumstances and closed the cavity. As might be expected, an abscess formed, and this he attempted to treat by the use of anti-septic washes, but of course as long as the foul pulp remained he could not obtain a cure, and the matter was carried along this way for a year, and she never would permit him to go into the roots, because she knew it was wrong. Finally the patient came to me with this tooth. As I took out the dressing she asked me if there was

any reason why a cure could not be effected, and I replied that I could see no reason, and went to work to do just what he had tried to do. She put a stop to my doing it, saying she didn't propose to have anything of that kind done to her tooth. I immediately arose in all the splendor of my dignity, and said that I should either treat that tooth as I wanted to do or she could go somewhere else. So shocked was she at being spoken to in such a manner that she absolutely cried like a baby in my chair. The sight of the tears made me feel repentant, and I began to explain the case to her, and drew a diagram to illustrate. She allowed me to treat that tooth, and it was cured. She told me when she first came who had treated her, and when I looked at the tooth I was thunderstruck to find that man's name coupled with the treatment of this tooth. I said nothing, however, and when we came to the discussion as to whether I should drill into the tooth or not, the lady said, "That's just what Dr. — wanted to do," and I then saw through the whole matter at once. He knew what ought to have been done, and he did as well as he could under the limitations placed upon him, and the only mistake he made was in not insisting on doing what he knew to be right or nothing at all. The lady and some others of her family have become regular patients of mine, and he has lost them simply because he did not stand up and resolutely say, "I must treat the tooth in the proper way or not at all." If no one else has any remarks to make I will ask Dr. Bradley if he has anything to say before closing the discussion.

Dr. Bradley.—I think the remarks generally agree with the opinions expressed in the paper. The point brought out by our President and Dr. Daly I think I emphasized quite markedly, and it may do no harm to repeat what I said in my paper, that there are cases where it seems to me it is proper to accept suggestions from the patients, and in other cases it is perfectly legitimate to use your own judgment, and do what in your opinion the case demands, even though it is not just as the patient suggests. In regard to copper amalgam, for those who are satisfied with the results obtained in their practice, I should say it was good judgment to use it; I have used it a very little myself. I will say that I do not use it now, as I like the appearance of other amalgams better, and find them fully as satisfactory,—rather more satisfactory in results than copper amalgam.

There is one point I did not mention. In our attempts to preserve bicuspid teeth in approximal cavities, if we have any reason

to hesitate about putting in what we have spoken of as a "permanent" filling (by which term is more often meant a metal filling), I think a very good way is to use gutta-percha, perhaps half-way from the cervical wall, and then make a cement filling to the crown. That is my judgment of how to treat those cases where circumstances are not in favor of a metallic filling.

Dr. Stevens.—I would like to ask Dr. Bradley why his judgment leads him to do that?

Dr. Bradley.—My experience leads me to think that the cement is not so satisfactory at the cervical wall,—that it dissolves, or, for some reason, leaves the wall unprotected. The gutta-percha does not dissolve; it seems better adapted for the protection of the cervical wall, and yet for the crown it has not the wearing properties that the cement has, and I have had very successful results from filling those approximal cavities half-way up with gutta-percha, and then filling the crown with the best cement I can find.

THE regular meeting of the American Academy of Dental Science was held at Young's hotel, Boston, April 3, 1895, at six o'clock.

The paper for the evening was read by Dr. Charles A. Brackett, of Newport, R. I.; subject, "Assistants and Assistance."

ASSISTANCE AND ASSISTANTS.

BY C. A. BRACKETT, D.M.D., NEWPORT, R. I.

In the old days of negro slavery in a portion of our land it was said that differing characteristics between people of different sections might be described thus: A Southerner never does for himself anything which another can do for him, and he never does alone that about which he may have help. The New-Englander never asks another to do for him that which he can do for himself, and he does not have help in doing that which he can do alone. In the old order of things, with people of whom we speak as belonging to the old school, these descriptions were not far from having a good foundation in truth; but time and circumstances have brought changes in the way of doing things to all.

I am myself of New England parentage, the descendant of a stock that had all along been under the necessity of hard work,—harder than we of to-day always realize and remember,—and they brought up their children to work, to work all day, and to work every day, and to work quite after the defined New England fashion. I shall never forget the jealousy which I had when ten years of age of an older boy in the neighborhood who had been hired to help in cutting up the wood-pile which I wished to cut alone.

I got also by heredity, example, and precept other tendencies and other training which included in detail much guidance in regard to the practical affairs of life. I was taught that I should mind my own business; that I should avoid partnership relations; that I should seek to keep my own affairs in my own control, and that I should be cautious about becoming responsible for the doings of others. However poorly I may have learned the excellent lessons put before me, I shall never cease to be grateful to the best of fathers and the best of mothers who gave me the substance of all that there may be in me of good. And what I have said of my own case finds doubtless its counterpart in the experience of nearly every one seated about this table to-night. It is the story of a

large part of those who have made their lives a credit to themselves, an honor to their parentage, and a service to the world. The spirit of such training can never become superannuated or shown to be fallacious. Superficially, it may seem not quite in harmony with modern methods; essentially, all that is good in each is in entire accord with the other.

This congruity I did not at once see. When I came under the necessity of being the manager of my own affairs, I had a little time of seeking to do everything that I could with my own hands. That time I do not regret. On the contrary, I rejoice to have had the experience just as it was. It was most appropriate to the circumstances of the time; it stimulated my efforts, extended my resources, cultivated my self-reliance; was often that necessity which becomes the mother of invention, and it made the proper foundation upon which to gradually develop the plan of putting out of my own hands that which might be done equally well by others. Twenty-two years I have been a practitioner of dentistry. In the last twenty years of that time I have had help in my work.

On the title-page or in the preface of almanacs we are accustomed to find a statement to the effect that the calculations which follow are accurate for some particular place, as Boston, and that they may be made to serve for a considerable surrounding territory, as New England. My experience has, of course, been very largely dependent upon circumstances of time and place, and greatly modified by those circumstances. For other circumstances the calculation would need to be varied, or perhaps could not be made to serve at all.

When I located in Newport, there was room for me and work for me to do. The work was begun with certain ideas concerning it. Some of those ideas have been proved erroneous; others have become in the passing years more and more positive convictions. Newport is a small city; and it has seemed to me that in at least two prominent particulars dental practice in a small place should differ from that which is permissible, not to say advisable, in a large city. One of these particulars has reference to the subdivision of practice, the making and following of a specialty within the specialty. In the large city the dentist may do no extracting, or he may do nothing except extracting. He may give his whole attention to the general care of children's teeth, to the correction of irregularities, the conservation of adult's natural teeth, the insertion of artificial teeth, crown- and bridge-work, or the practice

of oral surgery, with the probable consequence that the entire community has its dental needs the better served for his so doing. Again, in the large city, where there are many practitioners, the man of experience, of superior abilities, extending reputation, and rapidly growing practice may increase his fees beyond the ordinary, or beyond what they were in his beginning, and this, if properly and honestly done, without injustice to any one. There are inexorable limitations to the amount of work which one man may do in his life, and it is legitimate that the compensation for that work should be influenced somewhat by the same laws of supply and demand which dominate values in the commercial world. The express train would cease to be an express train, or to possess the advantages of an express train, if it went at the speed of an accommodation train and stopped at every station. The railroad system which stopped every train at every station would serve but poorly the convenience of its patrons. So in the large city, the dentist upon whom extraordinary demands are made, and who can command extraordinary compensation for his genuinely skilled and superior services, may be not only justified in avowedly making his fees high, but he may find it his duty to do so in order to so limit his work that his physical and mental condition shall be always such that his patients may invariably receive the superior service for which they pay. Further, he may by such course, without making hardship for any not well able to pay for his service, be aiding in justice to his dental neighbor, equally faithful, but younger, less experienced, or less well known.

I am unable to mention this subject of fees without an expression of caution to men, and especially to young men, that they do not put effect in the place of cause, and be hasty and arbitrary in demanding the high fee, thinking more of that than they do of first attaining the superiority of service. There are needed many more accommodation trains than express trains, and we should all seek to avoid mistaking the calling with which we are called. In the small town the plan of indiscriminately raising the fees in order to lessen the volume of practice is not usually a thing to be accomplished without imposing hard conditions upon some dwellers in the community.

While, perhaps, having a smaller proportion of extremely poor people than most places, Newport does present an exceptionally great range in the material means and the advantages which means command, of its population. A proper share of all these classes of people rightfully expect that their needs for dental service shall

be met by local practitioners, and they are so met. A moment's thought will show that a practice of such range of demands is more complicated to manage with satisfaction to all concerned than is one more nearly uniform in means, advantages, standing, desires, and ways of doing things. In the complex practice assistance seems to have particular adaptation, and actually independent operative assistance may probably be more readily made helpful than in an exclusively high-class practice.

Except it may be in regions out of the range of the intimate acquaintance of those who are assembled here, the taking of students—that is, entire novices—into offices, with the double object of the principal gaining assistance in his work and the young man being made a dentist, is happily almost entirely a thing of the past. Some of us can almost remember the time when the student of general medicine got his instruction, both theoretical and practical, largely from a private preceptor. Every one of us is cognizant of the fact that even up to the present a similar plan has been followed in the study of the law, but in the law the plan is fast passing out. It is to-day almost forgotten that it ever had place in the study of medicine. Such of it as continues in dentistry can advantageously be only to supplement and make more perfect the teaching of the schools. While it is to be maintained that the schools are right in requiring the attendance of their pupils through three full school years, it is to be admitted that there are certain graces that have their acquirement and cultivation greatly favored by a little experience in the atmosphere of a refined private office.

In my own case as a student in an office, and in the single instance of my being a preceptor to a student in my office, the experiences were gratifying and, I believe, thoroughly profitable to all concerned; but in each case it was understood in advance that with all reasonable celerity the advantages of the school were to be embraced and the degree attained. But in multitudes of cases of students in offices the arrangement has not yielded the most profitable results. The preceptor, through incapacity or inattention, has failed to do his duty in wisely and judiciously superintending and pushing the studies of the learner, while on his part the learner, even with the best desires and intentions, has been incapable of rendering the principal such help as he would have been glad to have. In proportion as the student becomes advanced and experienced, wherever that progress has been made, the profitability of the office relation increases. The advanced student is

more apt to learn from what he sees, and he can render in return more efficient service.

This leads me to say that in every practice whose volume justifies considerable assistance, that assistance may be best rendered by one who has had the teaching and the training evidenced by the possession of the degree. For nineteen years I have had in my office graduate assistance. In succession four different men have occupied the position. With myself, there have been five parties in interest. According to the best of my knowledge and belief, there has been no time when any one of the five would not have testified that the arrangement had been a profitable one for him. By such plan each party gets the best end of the bargain, while the patronage of the office is more promptly and better served. The principal is relieved from demands which he could not possibly meet, and this surplus which his attainments and reputation have attracted, instead of being driven away, remains to be acceptably served under the same roof, with his advice whenever needed, and in a way to yield to him some return,—a fair proportion.

The assistant is presumably a recent graduate, one who has his name and fame to make. I believe the young dentist at the time of obtaining his degree is more practically educated—that is, he is better fitted for actually doing his work—than is the young man in most of the other professions and specialties at the time of receiving his degree. Of course, the young dentist has still much to learn from experience,—I suppose most of us would say as much after graduation as before; but the principal thing which the young graduate needs is a chance to go to work, the opportunity to show what he can do, to inspire confidence and to become known. This the assistant's position gives him. Being vouched for by one whose recommendation is reliable and influential, his work begins at once, his income begins at once; and idleness and waiting, the proverbial starvation period, are eliminated. He gets compensation in money, he gets it in constant conference, aid, and counsel from the older and more experienced man, and he gets it in a growing and developing practice for himself which the transfers of his principal and his own faithful competency are all the time building up.

This assistant, of whom I have just made mention, should be, like his principal, an all-round man, capable of doing with his own hands everything, operative and mechanical, within the usual range of a mixed dental practice. Particularly should this be the

case if the volume of the business of the office is sufficient for the employment of only one assistant; although there are instances most satisfactory in their general working, of the association together of two men, one of whom, from taste and capacity, gives his attention to the operative department, while the other, for like reasons, attends to the prosthetic branch.

During a large part of the time for the last twelve years I have had regularly a second assistant, whose work has been entirely or almost entirely in the laboratory. The intent is to have the person in the laboratory do the laboratory work, the whole laboratory work and nothing but the laboratory work. During these dozen years the place has been filled by a succession of different individuals with differing qualifications, but usually with a good degree of competence for the work. Several times the place has been occupied by a young man who had had one or two years in a dental college, and who found it convenient to spend a summer vacation or a longer interval in earning some money, while at the same time adding to his store of knowledge and experience. Two young men were of the kind giving their whole attention to laboratory work. One of these was a young Englishman, who had been regularly through a portion of the long apprenticeship prescribed in his native land, and the other was a young colored man. Each one of these was particularly capable in his work. The young colored man of good abilities of the right sort may find in the dental laboratory full, congenial, and remunerative employment in any community where there is the work to be done; and he may thus make a success in locations where he could hope for little as an operator or as a general practitioner.

To fill the laboratory man's place it is far from necessary that one be a dentist. Though it is well for him to know something of anatomy, physiology, and pathology, he is likely to be more helped in his work by a knowledge of physics, chemistry, metallurgy, and the principles of force and mechanics. One who has served an apprenticeship to the jeweller's trade will usually be found to have special aptness in neatly and ingeniously constructing the varied appliances needed to meet in the best way the requirements for regulation and replacement.

For nine months I have had in my laboratory a young woman, and for six months, with such occasional little assistance as the others of the office force could render, she has done alone my laboratory work, and also, as she had opportunity, some work in the same line for several of my dental neighbors. Quite a large part

of her teaching during the first three months was by a proficient young man who had had two years in the Harvard school, and who spent the summer vacation in the laboratory with her. Until she came to the laboratory she had not had practice in any similar occupation, and, as would be expected, her present capacity for the despatch of the work is not what it will become with more experience. She is most careful, painstaking, and earnestly scrupulous in seeking to avoid chances for error and failure. She began the work with the avowed purpose to make it a permanent occupation; and I must testify that the experience thus far has served to confirm my long-held conviction that this field, in which women hitherto have done so little, may be and, doubtless, in the future will be one in which they will appropriately and helpfully do much.

While I am not, in a certain sense of the term, a woman's rights advocate, I am an earnest believer in the idea that any woman should have the right, does have the right, to engage in any worthy occupation for the pursuit of which she is capable, and she has the right to proper compensation for work which she does. As a worker she is entitled to no whit less respect, but rather the reverse. In our section of the country there are very many more women than men. Of these women a large proportion are so circumstanced that they must be dependent upon others for support or they must do something to help themselves. How infinitely more honorable is the spirit of self-helping independence.

During a good many years I had an office-boy, a succession of office-boys, whose services, while not always most acceptable in manner, were a real help. The office-boy is still retained, but for several years his duties have been entirely outside of the office.

One of the most conveniently useful members of the office *personnel* is the office young lady. She comes in the morning and sees that the rooms are aired and dusted, and everything neat and in order, and so kept throughout the day. She sees all the patients as they come in, learns the objects of the calls, makes appointments, and transacts with callers all the business which she can. She assists ladies and children in removing their wraps, and seeks to contribute to the comfort of all. She prepares ready for introduction into the cavity filling-materials of various kinds. She assists in the application of the rubber dam or in the use of other agencies for maintaining dryness. She holds the rubber beyond the border of a far-reaching cervical cavity, she aids in the starting of fillings, she anneals gold and passes it to the position where it is to be packed, or with the hand-mallet consolidates it; and she does num-

berless things to help on the progress of an operation. However much we may pride ourselves on our ability to perform any operation unaided, there is no denying that in many operations our own comfort and that of the patient may be far better served by two pairs of hands than by one. After every patient the young lady sees that all instruments and appliances are cleaned and restored to their places before she summons the next patient. She should do as much as possible about recording the cases, keeping the books, sending and receipting the bills, and looking after a portion of the office correspondence. For more than a year I have been a good deal helped in my correspondence by the use of a phonograph and a type-writer, the letter being spoken by me to the phonograph, the young lady and the machines doing the rest. The young lady attends to the telephone, and is the general means of communication about the office and, as far as possible, between the office and the outside world. She is engaged with the understanding that she is to make herself useful in every possible way about the office.

A practitioner of dentistry who has always worked by himself can have little idea how convenient and how comfortable a thing it is to have such assistance as I have just named. The presence of a young lady about the office, instead of being looked on by patients as an intrusion, is regarded by them as a pleasant thing, and they are quick to appreciate the shortening of operations and the other contributions to their comfort which she is able to make.

I am not proficient at all in the science of economics, but I believe there are sound principles underlying such combinations of workers as I have described. Not all portions of the work in a dental office require the skill of the specially trained and experienced practitioner. When the demands upon the office become more than the dentist alone can meet, it is wise in him to delegate to other hands that which other hands may do. He may thus retain and conduct a practice of a volume otherwise impossible, receiving therefor a compensation which is shared with those who are given employment, and who share in the service. Rightly managed, the plan is a consolidation of interests to the advantage of all,—those who serve and those who are served.

DISCUSSION.

Dr. Brackett.—Certainly all the ways of transacting the business of the world are undergoing modification. Not infrequently, when stopping in the city at the Thorndike, I have been assigned to a room which overlooked the doors that open into Park Square

from the Providence Depot, and in observing the people coming in to their day's work on the early trains I have been very much impressed by noting what a large proportion of them are women, the majority of them apparently full of health and cheerfulness. It is impossible to go about in any of the business districts of this great city without noticing the fact that wherever there are books to be kept or letters written, women are doing a very considerable share of the work. I am a thorough believer in the dignified right of women to do all these things and many others. I am a thorough believer in the perfect propriety of their being graduates and independent practitioners, but there are many women of ability who perhaps would prefer not to assume the conduct of an independent enterprise, who may find in the assistant's place great opportunity to be useful to themselves and to others. I think there are some sound principles of social economy involved in this. I am sorry to say that I am only a very superficial student in political economy, or even in general economy. I must confess that I know very little about them, but it seems to me genuine economy in a man, when he has attained his skill in doing certain technical work, to employ labor to do that routine work in which less skill is required, or labor requiring another kind of skill. I have among my patients a man who has vast business interests, not of his own, but he has millions of property in his hands for his direction, and this property is particularly liable to injury from the elements: it is at risk at sea. He is a domestic man, and his wife sometimes asks him to do little things about the house. He does whatever he is asked, but occasionally, when he is fixing up new curtains or something of that sort, he will remind his wife that she is employing rather an expensive man for that kind of work. That is the idea that in a sense applies to our work, and it seems to me the more we can cultivate this system, and not have it get beyond the demands of meeting the volume of business at hand, the more everybody is advantaged. There is as sound a principle for gain for the employer on a small scale as there is for the Fall River manufacturers who employ hundreds or perhaps thousands of operatives, or for the New York and New Haven Railroad Corporation in its great system, so that for the principal and employé it is a decidedly beneficent thing. Then when it comes to the service which is rendered to those who are the recipients of the service, they are greatly favored; they are acceptably favored. The day has gone by, I think, in most busy offices when the patient expects to see about the office no one but the single practitioner himself, and we should be sur-

prised nowadays to have a patient say to us, "Now, this denture that I am to have you will do all with your own hands, won't you?" We do not hear that now as we did years ago. The patient recognizes the principle involved, that the directing mind need not necessarily have its own hands accomplish the work. I think the principles that I have tried to state, however poorly, are sound principles. I have endeavored to put this matter before you in a suggestive way. I speak not only to those of you who employ assistants, but I wish to put these matters before those of you who are struggling to meet the demands of a busy practice, who have arrived at that stage where the most unwelcome communication you receive is an application for an appointment, and the most dreaded sound is the ring of the door-bell; and to say to you that by the employment of assistance you may get rid legitimately and advantageously to all concerned of a share of the routine burden of work.

Dr. Eddy.—As you all know, I thoroughly believe in assistants, both lady assistants and professional graduates. There are many ways in which they can be of help to you. To begin with, there is a noticeable improvement in the neatness of the office, as every office shows at once the touch of a woman's hand in the ease and cleanliness in the arrangement of things about the room, and this neatness reacts upon the operator in the matter of dress. There is also a certain amount of refinement of manner in the woman, and that cannot fail to reach the operator and promote carefulness in his personal conduct and also in the expressions he uses before his patients. Again, the watchfulness and helpfulness of a lady at the chair begets self-confidence in herself, which, in turn, is fostered in your patient, who develops confidence in the assistance, and they soon become perfectly willing to place themselves in the assistant's hands for whatever part of the work is intrusted to the assistant. I have my assistant meet all patients and attend to all formalities of receiving them and getting them ready for the chair; also, make appointments; also, when a patient comes for the first time, and the assistant takes a chart and makes a thorough examination of the patient's teeth, charts all cavities, and notes the doubtful ones, there is a great deal of time saved in knowing that you have seven cavities to deal with instead of seventeen. My oldest lady assistant treats all my dead teeth. After I remove the pulp she follows it up with whatever treatment I may suggest, fills the canals with gutta-percha, and the case comes back into my hands at a subsequent appointment with the main cavity ready to be filled.

I have found ladies more helpful as assistants than graduate dentists. After a graduate has been with you for a while his time is more and more engrossed with the patients which his own tact and ability have enabled him to acquire, as well as those you have placed into his hands. You do not feel like asking him to do those things that belong properly to a helper, and by the end of the first year they are of no assistance whatever. The lady does exactly what you tell her to do, and is more faithful in all her service; does not introduce a method of treatment you know is obsolete and from experience not satisfactory. One way in which they can save you considerable time is in making alloy or cement fillings. We have electric bells at all the chairs, and a hotel annunciator on the wall to tell which the call is from, there being five chairs, four operators, and one girl attends to two chairs. If we want filling material, a girl is called and told what is wanted, and by the time you are ready for it she has it all prepared. In preparing for crown-work there are cases where you would like to have some one mix your cement for you, and a lady assistant, with a little practice, can do this very satisfactorily.

What does all this help and avoidance of interruption mean? It means time saved that is valuable and that can be given to your patients. As the years go on, a man's reputation and practice should increase, and the only way he can obtain the requisite relief for exercise, social and mental stimulus, is by assistants. Again, it is a great precaution to have a lady assistant. In giving anæsthetics to a lady a man with a small practice, in a city like Providence, is sometimes placed in an embarrassing position, and there are times when a lady assistant could be of great service to the operator.

As to the graduate assistant, a man at graduation is full of text-books, but not generally posted in professional readings. Seven out of eight of them are wholly without office experience. He enters an office of a busy practitioner. He exchanges text-books for years of experience. The old and new are brought together, and are both benefited. No man is wholly self-made. There are not all the elements in a man to wholly develop him; he has undeveloped faculties, or faculties apathetic. Co-operation develops faculties and activity, and a longing for the truth. The old man is pulled from the rut; the young man moves steadily, because he has a balance-wheel and a regulator to carry him over the dead centre, and take up and smooth out his erratic motion. Men do business alone and succeed, but the highest success comes by com-

bination; evidence your great department stores and combination of bankers, etc.

Professional men to-day need more correct business methods. Different men in an office look at the same subject from different points; it is the combination of the photographs of the same subject that makes the true picture.

The advantage of assistants from a pecuniary point of view Dr. Brackett has already suggested to us.

All these matters pertaining to the assistants and how best to make use of them bring added cares and responsibilities to the dentist, but who would not prefer in this busy, rushing nineteenth century to go out like the bursting of an incandescent lamp than to drown in his own oil like a tallow dip. We have only one life to live, and we all want to do our best with it. I don't see how it is possible for a man in a busy practice to do justice to himself and his patients without making use of assistants.

Dr. Clapp.—Dr. Brackett has told his story so gracefully that it is rather embarrassing to attempt to add anything to it. I will fully endorse every word that he has spoken, and just give one more duty that I place upon my lady assistant. This lady has been with me for twelve or thirteen years, and one of the things from which I receive very great comfort is in her attention to children and nervous patients. For instance, if I am at work on a child, she will read or tell the child stories that are suitable to its age, and these are the best anæsthetic, the best obtundent with which to handle children, as far as my experience goes. I thoroughly believe in it. Time and time again I have a child in my chair, and the lady devotes her attention to managing the child while I do the work and keep my mouth shut. Oftentimes for ladies, young ladies, ladies of middle age, or elderly ladies, she reads chapters from books or short stories, and a two-hour appointment passes almost before they know it. I would recommend to all of you who have lady assistants to try this method, for I am sure you will find that you will get very great comfort. I would like to emphasize one point Dr. Brackett has touched upon, and that is this: how anybody with a practice that takes his whole time and a little more can afford to be without an assistant at the chair is something that very much puzzles me. One can do from one-quarter to one-half more work with the assistance of a lady than he can do alone. For instance, your patient is in the chair; every accessory to the operation is attended to by the assistant; you adjust the rubber dam, you prepare your cavity. Before it is

quite completed you have determined with what you will fill that cavity. If it is amalgam, you tell your assistant that you want a medium, small, or large filling prepared of such an alloy. It is prepared and placed on the table before you, and when you lay down your excavator, after having made the last cut, without a second's delay you proceed to insert the filling. The same thing, of course, can be done with gutta-percha or cement as with the amalgam filling. The only objection to this method is that you wear your life out a little quicker; you won't live quite so long as if you stopped and took a little rest, instead of having things arranged so as to keep you working every minute of the day.

Dr. Andrews.—In a general way, Dr. Brackett's description of the lady in his office, and her duties, corresponds so nearly to the lady in my own office that I will simply say he has told you my own experience better than I could myself. My opinion coincides with that of Dr. Clapp and Dr. Brackett, that no busy dentist can afford to do without a lady assistant. I was very fortunate, perhaps, in securing one of the best,—I don't think it would be possible to have a better one. I would like to call on Dr. Cutter, who has had some experience with lady assistants.

Dr. Cutter.—I can add but little to what has already been said with reference to the helpfulness of lady assistants. The one that I have is invaluable to me. She makes all my regulating appliances and also relieves me of much care in adjusting them for my patients. I do not see how I could get along without her.

Dr. Ames.—You are all telling about the prizes which you have. I want to tell about mine. I have two lady assistants. I had a man in my laboratory for several years that I considered a very fine plate-worker. He was a young colored man who had worked at it for a long time, and a couple of years ago he died very suddenly, and for a long time I could not find any one to fill his place. I finally decided that I would have to teach some one, so I took a young girl who was a niece of my cook. She was a young Irish girl, with a fair education, and was a nice, respectable young woman about twenty years old, and I commenced to teach her to make artificial teeth. She took hold readily and learned very quickly, and now she does all the work that is done in my laboratory to my satisfaction. My other assistant is very valuable to me, shows a great deal of tact in receiving patients, takes care of the office nicely, looks out for my instruments a great deal better than I could myself, and I think she is the best lady assistant I have ever seen. I never had a graduate assistant.

Dr. Eames.—It is difficult to add anything to such a complete paper on the duties of assistants, but, in a general way, I think, whoever has had such service, and attempts to get along without it, soon finds how much help the assistant was to him. It is almost impossible, after being accustomed to such assistance, to get along without it. I am indebted to Dr. Clapp for suggesting what he has told here to-night in the way of reading stories to children and to older people, and I have been following the suggestion for the last five years, with the greatest satisfaction. I have been fortunate in having my own sister as assistant, and I intrust to her the keeping of my books, the making out of my bills, and almost my entire correspondence. In the matter of filling the root-canals, I have not gone so far as to trust that to any one. It seems to me that it is an operation needing special skill and a knowledge of just what is best to be done. I would almost say that I would trust the filling of a cavity to an assistant sooner than the dressing of a canal, but I can see, very readily, how one could save a great deal of time if the assistant were competent to do it. In regard to the diagram and examinations of mouths, I have special hours in which I see patients for examination. I have small diagram-cards on which the result of the examination is noted, and at the time of the examination I try to estimate the time it will take to complete the work, and all remarks which I consider necessary to the case are put on this slip of paper and kept by the operating-case for reference until the work for the patient is completed. This, with the record of each visit and amount charged, is transferred to a larger diagram, on which fuller remarks are entered and all are subsequently posted into a book. In the matter of introducing gold to a cavity, I am sure that I lessen the time of operating one-half. The annealing of gold and placing it in the cavity is done by the assistant. I simply nod my head when I wish it to be placed in the cavity and with the plugger point to the exact part where it is to be placed. The last touch of the instrument is understood by the assistant to be the spot where it is to be introduced. I would say that I find it of the greatest value to have duplicate instruments, and when I am through with certain excavators the assistant takes them away, and duplicate instruments, napkins, etc., are furnished, and the chair is in readiness almost instantly for the next patient.

Dr. Ainsworth.—I don't know that I can say anything in addition to what has been said. I have for a number of years made use of an assistant; not in all the ways that have been referred to to-night, but I can readily understand that the right person could render the

assistance satisfactory in most of the cases spoken of. I should not know how to get along without an assistant, now that I have come to rely so much upon one.

Dr. Werner.—I think that must be the universal report of all those who have had assistants. From the first I have had my lady assistant assist at the chair, passing gold to the cavities. I talked not long ago with a dentist who has had an assistant for a long time, and he asked, "Did you say your assistant helps you at the chair?" I replied, "Why certainly, what would I have her for if not for assisting me at the chair?" He then wanted to know if some of the patients did not object to this, and I could record but one instance in which a patient objected, and that was mainly from a misapprehension of the duties of the assistant, and not being accustomed to having any one around besides the dentist. At the second sitting I asked the patient if she had any objections to the assistant helping me during the operation, and she replied, "Oh, no, I have got used to it now."

The first instruction I would give a new assistant would be in picking up things with the foil-carrier. I should at once set her to practising picking up small pieces of paper with the foil-carrier, and show her how to do it in such a way as not to obstruct her view or mine. That seems to be a simple thing for them to learn, and yet it is of great assistance to the operator. I find that they are very faithful and accurate in book-keeping. To my surprise the lady assistant I have now, after an experience of only three months, is making out and receipting all bills, and for months made but one trifling mistake.

Dr. Clapp.—I want to add just one word in connection with this subject of assistants, and that is, the advisability, I might say necessity, of having large operating-rooms. I do not believe in having an operating-room that is not more than eight feet square, and confining three people in that room for the greater part of the day. In the interest of health it seems to me that an operating-room should not be less than fifteen feet square.

Dr. Werner.—You cannot always have that in an expensive locality of a city. There should be an electric fan in every dental office. They are a comfort, ventilating and purifying the atmosphere, preventing odors of anæsthetics or medicaments about the room or clothes of the operator; they are noiseless and inexpensive.

President Smith.—If no one else wishes to speak on this subject, I will ask Dr. Brackett if he cares to say anything in closing the discussion.

Dr. Brackett.—I will detain you but a few minutes. I wish to express this thought: The modern busy dentist, whatever his ambition and ability, and with all the help that he can advantageously employ, is still able to care for only a limited amount of dentistry. From this point of view one readily sees the necessity for economy in the expenditure of our time and energy.

I neglected to mention the practice of reading in the office, referred to by Dr. Clapp, and which I have followed somewhat for years with a great deal of comfort.

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, October 2, 1895, at six o'clock, President Smith in the chair.

President Smith.—Gentlemen,—The essayist of this evening certainly needs no introduction to the Academy. I can only say that it gives me great pleasure to present to you Dr. George F. Grant, who will read a paper on "Hypnotism: Its Value to the Dental Specialist."

HYPNOTISM: ITS VALUE TO THE DENTAL SPECIALIST.

BY DR. GEORGE F. GRANT, BOSTON, MASS.

It is fair to state at the outset of this paper that it is written more in view of eliciting discussion of the subject than of imparting any instruction as to the direct means of inducing hypnosis for the purpose of lessening the pain or reducing the dread of dental operations.

This subject teems with interest for us as any subject dealing with an agent for which such claim is made must necessarily possess. Every considerate operator would be made happy by the safe, sure abolition of pain from the operations he is called upon to perform. It is a safe proposition that up to the present time no such agent has been obtained.

I am at present considering hypnosis in this list, though I am willing to withdraw it upon conviction.

My experience in practice is like that of most others. A common question now from patients is, "What do you think of hypnotism?" In order to give a reasonably intelligent reply, one must read up and obtain a smattering, at least, of what has been written on the subject, with a special view to its applicability to his use and needs.

I believe that the conditions governing the application of this agent to medicine or surgery are so widely different from those with which we have to do, that very little except the general principles can be applied to dental practice.

It seems too great a trespass upon your time to enter into the history of hypnotism, for it extends very far back into the earliest of recorded history. My wish is to take up the latest writers and observers on the subject and glean from them what can be made

valuable to us. One will find here rather puzzling variations of views.

First, as to the methods to be employed in the induction of the hypnotic state. Second, as to what percentage of people are susceptible to hypnotic suggestion. There are many other points upon which the opinions of students of this science differ, but I have selected those bearing most directly upon what it is desired to consider in a short essay.

The first great question is upon the means of producing hypnosis.

Abbé Faria said, in 1815, "The cause of sleep was in the person who was to be sent to sleep." "This (says Moll) is the main principle of hypnotism and of suggestion."

Besides this we have the rapidly-revolving mirror of Luys, used to produce speedy and extreme fatigue of the eye, the magnetic pass used by older magnetizers, the sound produced suddenly by striking a large gong, or a sudden ray from a Drummond light.

The effect can be produced through a sense of touch, even by gentle stroking of the skin. Others produce it by touches on the forehead, pressure upon the eyelids, etc. Then comes fixed attention, which is considered by some as the only means, while others combine it with mental methods, as Bernheim does.

Dr. Bonwill, in a paper on this subject, lays great stress on self-assertiveness on the part of the operator, and that "suggestion should be made in a loud, commanding tone, like a general commanding an army."

Dr. Warren and Dr. Faught, in discussing the paper, agreed that loudness of speech and commanding tone were quite unnecessary, as the same result could be obtained by a quiet tone.

Professor Newbold says, "Of all the means of heightening suggestibility with which we are acquainted, none is so easy of application and certain in its effects as the concentration of attention and limitation of the conscious field."

Dr. Osgood, of this city, says that the passes are unnecessary and smack of charlatanism.

We have here, then, many opinions as to the proper method of inducing this state.

Moll says, "Which of the above methods, or which combination of them, is the best for practical use? is a question the answer to which is not so simple that every one who has made a dozen experiments is justified in trying to reply to it."

I will now call your attention to the question of susceptibility. We here find a great difference in opinion between investigators.

Some claim the ability to hypnotize all subjects, even against their will (Donats), while others place the percentage very low.

Liébeault claims ninety-two per cent., Delbeouf eighty per cent., Bernheim and Ford claim over eighty per cent., while Bottey claims only thirty per cent., and Moll only twenty per cent. To compare, sift, and digest all these views seems no slight task for a man who is making the investigation with the purpose of adding one more agent to his list of aids in painless operation.

It seems to be generally agreed among men who have used hypnotic suggestion as a therapeutic agent, or as a means of performing painless surgical operations, that many complicated conditions exist, or may arise, which can only be properly met with by a systematic training, followed by careful and oft-repeated experiments. All this precedes the application of this science. We must first master the subject, then apply it to our specialty, if we intend making use of it.

Here a thought occurs which to me seems to have an important bearing upon our view of expediency.

The medical man would in all probability not find it necessary to induce the hypnotic state in many cases daily, nor would the surgeon perform operations continuously every day for from six to eight hours, as the dentist does. The majority of patients who visit the dentist require operations of a painful nature, while of those visiting a physician only a small percentage require or receive immediate surgical treatment.

This seems to me an important point for consideration, as even the most skilful or enthusiastic hypnotist would find that, whether he gave himself up to his subject or the subject submitted wholly to him, there would be so great a drain upon his mental force from such a continuous exertion, that when added to the physical and mental strain, inseparable from daily practice, it would tax the ordinary practitioner beyond his strength.

This seems a moderate view of this aspect of the question. While most of the men who have written, especially upon the dental side of the question, have given the impression that the art is easy of application, the very reverse is true of what the medical writers have to say. This is rather remarkable in view of the peculiarly sensitive organs upon which dental operations are to be performed; and, further, that all authors are not agreed that insensibility to pain is a feature of hypnosis. One rather gets the idea that it is a condition of unconsciousness of pre-existing pain, rather than insensibility to inflicted pain. A consideration of these obser-

vations rather leads to the hypothesis that the dentist sometimes mistakes a faith established by his reassuring manner for an hypnotic condition.

I think Dr. Bonwill's paper on hypnotism is a stronger exposition of what may be accomplished by considerate preparation of a patient for operation than it is of the value of hypnotic suggestion.

There is this much to be said of the results of investigation of this subject in the hospitals abroad, notably those of France and Germany, where most is known and the most extensive experiments have been made, that their results can only be regarded as establishing the existence of this great power for the benefit of mankind under conditions of nativity, habit of obedience, and strong predisposition to accept what is offered in the way of treatment. We all know that hospital practice is a widely different thing from office practice, and, if I am rightly informed, the physicians of foreign hospitals exercise far greater powers over the patients in such institutions than are permissible in kindred institutions in this country.

In order to restrict this paper to as close a bearing on the application of hypnotic suggestion in our specialty as could consistently be accomplished, I was obliged to omit much that is interesting,—namely, its psychological and physiological aspects, the dangers which of necessity are to be recognized and avoided; also the various theories advanced in explanation of the phenomena exhibited during hypnosis.

In my opinion the more thoroughly one reads and investigates the subject, the more clearly the fact is established that for our purpose it presents too many complex problems and requires much further investigation by minds trained to that especial kind of work. If it is to be used as an adjunct in dental operations, patients should bring their trained hypnotist to the dental chair, leaving the dental specialist to the performance of his legitimate functions.

In support of this last clause I cannot find better words than those of Dr. Osgood: "The dentist has no business to try to relieve every trouble of which a patient may complain, any more than I have to clear out a dental cavity without proper education and experience."

To that remark I give a hearty amen, and think it contains a whole world of application.

Upon the question as to whether a dental specialist might use hypnosis, after a course of training under an expert, I should say that weighing every consideration, those which I have tried to

present, with those which lack of space forces me to omit, it is well to be (in the words of Professor Newbold) "sceptical as to facts and cautious as to theories."

DISCUSSION.

President Smith.—Will Professor Fillebrown kindly open the discussion.

Dr. Fillebrown.—I thank the president for the opinion that I may know something about this subject and be ready to speak about it. I have pronounced opinions upon it, but there doesn't seem to be much latitude left for me to express them, as, according to the paper, dentists are debarred from using suggestions at all.

The paper is an excellent *résumé* of what has been said upon the subject. I hoped that the essayist to-night was to give us something practical,—something from his own experience. However, I am very glad that the subject has excited interest enough to bring out a paper from any one aside from myself. I think that a very distinct gain.

I believe that the modern dentist, and particularly a member of this Academy, is something more than a mere tooth-puller or a tooth-plugger; that in his daily work he considers other conditions of the system and the relations of the teeth to them.

I believe that a dentist is bound to know enough to use an anæsthetic; I think he is bound to know when and how to use a narcotic; I think he is bound to know enough to be ready to meet the emergencies that may occur during his dental operations in whatever form they may come. Now, I say that a dentist who does not know how to use every kind of a sedative, or who is not able to comprehend and get a practical knowledge of a matter that is as well understood as mental suggestion is to-day, is not fully equipped for his profession. We are bound by our relations to ourselves, by our relations to our patients, by our professional relations to the community, to be that much of medical men in order to do our duty to our patients. Now, as medical men, I say we are bound to know something of mental suggestion and of its power, and I, for one, offer no excuse for presuming to know what are the accidents that may occur and what I have to guard against. I say that I believe it is our duty to do that, and from that basis I proceed to say something of what I know about hypnotism.

I do not pretend to be an authority for others in this matter, but I do believe that three years constant study of suggestion,

using it daily in my practice and reading every author that I could get hold of, is sufficient to make me an authority for myself. I believe I have a fair understanding of the subject. In the works of such authors as Bernheim, Moll, Luys, and Charcot we find the same opinions are repeated; all quote the same facts; they all agree in their description of the same conditions; they all acknowledge the same dangers; they all recommend the same remedies for the same dangers; and when writers agree so fully, their opinions on any matter should not be difficult to understand. In fact, I believe that to-day there is not a therapeutic agent whose actions, limitations, and possibilities are better defined than that of mental suggestion, and there is not a single remedial agent that a man can use any more intelligently than this. If you prohibit the use of suggestion by a dental surgeon, what right has he to use opium, chloroform, or nitrous oxide gas? Here sits a man that, willing or unwilling, is one of the most successful practitioners of the art to-day, and a suggestion that he once made did me more good than anything that I got out of any book. Though I have been using suggestions for several years in my practice, I do not think that for a year and a half I have, in the sense spoken of here to-night, hypnotized a patient, and yet every one that was at all willing received the benefit of suggestion.

I was speaking to Dr. Andrews a moment ago of a patient that was in my chair on Monday. Three years ago I relieved her from a terror of dental operations, which was so powerful that she found it impossible to approach a dentist's office. She was in my office last Monday to have a tooth filled, and it had been so long since her last visit that she was again quite nervous. I felt her pulse and found her heart beating hard. After suggestion for a little time, I prepared and filled the cavity, with no pain and with very little disturbance.

I will mention another case. A young girl, twelve years old, very nervous indeed; she had been under treatment for nervous disturbance; she came to my hand at the close of the day, after trying for two hours to submit to the extraction of a tooth with gas; and could not be induced to even breathe the gas; and was then nearly in hysterics and her mother sadly disappointed. By my use of suggestion in two minutes she ceased sobbing and sat down in my operating-chair, and in three minutes more she voluntarily and quietly opened her mouth and allowed me to extract a first molar without flinching.

You may judge of her mother's astonishment and delight.

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The action of the mind in making a suggestion has been made very plain by Dr. W. H. Myers, of London, an active member of the European Society for Psychical Research. In the transactions of that society there are, perhaps, one hundred pages in all devoted to his discussion of the matter. He showed very clearly that the mind has two layers as it were,—a liminal or conscious layer and a subliminal or unconscious layer. One is the mind that we know about in which all acts of volition originate; the other, where all habits lie that we do not directly control. He contends that it is through the communication of one subconscious mind with the other that thought transference takes place. My own experience seems to give evidence of the truth of this phenomenon. If I am standing by my patient and want to produce a feeling of repose in my patient, I first want a reposeful feeling myself, and that voluntary action of mine will set my subliminal consciousness at work, and it seems to me that gives origin to the same thought and a similar relation between the liminal and subliminal consciousness of the patient, and in one, two, or maybe five minutes that same reposeful feeling possesses the patient. That is hypnosis, but not to a degree sufficient to effect the consciousness. I don't want to take that into consideration at all; it is the bugbear of being put beyond the limits of their own will-power that so many people object to, but I do not need or want to effect the consciousness or will in the least. All I want to do is to remove the fear of the operation and alleviate the pain of cutting the tooth. Medical practitioners will tell you that many diseases are largely exaggerated by fear, and if in these cases you can remove fear, you can generally remove the pain. In nine cases out of ten hypnotic suggestion answers this purpose.

I have now given you specimens of my experiences, and could give you a volume if there were time. I want to hear what Dr. Stevens can tell us of his experience.

Dr. Stevens.—There is this idea that I would suggest: if all dental practitioners were honest men, it might be safe to accept hypnotism for our purposes. If all practitioners were like Dr. Fillebrown, and did not care about carrying the suggestion beyond the stage in which dental operations could be performed without discomfort to the patient, it would be all right. But they are not all like that, and I am afraid it would be bad for the reputation of dentistry to introduce hypnotism into our practice, and my advice is, don't.

Dr. Fillebrown.—That does not quite answer my question. I know that Dr. Stevens does exert an influence over his patients

more beneficial than most operators, and can perform dental operations for many that are unable or unwilling to undergo the operation, under ordinary conditions. How practical does he make it? We need not call it hypnotism, call it anything; but will the doctor tell us what he does, and how he succeeds with it.

Dr. Stevens.—If I have a patient who is extremely nervous, I try, through my will to control that nervousness; I try to calm their nerves and quiet them; to get them into that condition in which they will allow me to operate without interference, and I have often succeeded.

President Smith.—Not in all cases?

Dr. Stevens.—No, not always; but I have many times succeeded in that way when I am confident I could have done nothing with other means at my command. When the thing can be done, within limits, it is all right. Of course if a patient is susceptible to hypnotism, in most cases it can be carried to almost any extent. I do not know what Dr. Fillebrown referred to when he spoke, unless it was the use of mental suggestions rather than verbal.

Many times I have had children who have been extremely nervous, and it was almost impossible to do anything with them before my suggesting to them to "let go of themselves," not to resist, to relax the muscles. That is half the battle; you must try to get them to give themselves up entirely, and many of my patients have had operations performed without exhibiting any nervousness at all, who at first would not allow me to put an instrument in their mouths without their screaming.

Dr. Fillebrown.—A good many years ago, when I was young and enthusiastic, I happened to be in Boston, and I heard that Dr. Wm. H. Atkinson was to give a clinic at the office of Dr. Dickerman, in Taunton. I wanted so much to see him that I took the trouble to go down there. The patient on whom he was about to clinic was a young boy, and his teeth were desperately sensitive; the cavity was in an inferior right second molar, and it was with great difficulty that any one could get the boy to allow an examination of it. The doctor had great ability to operate without hurting patients. After talking quietly to the lad for some minutes he took his instruments and went to work and cut that cavity all out, and the boy never whimpered. Dr. Ambrose Lawrence was there, and in his brusque way of speaking asked Dr. Atkinson, "How do you do it?" The doctor, with a quiet smile, replied, "Oh! the angels help me." "Yes," says Dr. Lawrence, "we all know that, but *how* do *you* do it?"

Now, Dr. Stevens, how do you do it? You told us that you try to calm their nerves and that you succeeded; and you went on and said that you did it through your will power, but what we want to know is, *How* do you do it? Can it be formulated? Can the rest of us do it?

Dr. Stevens.—I cannot tell you.

Dr. Fillebrown.—I believe I did tell you when I described the action of the subliminal consciousness. I believe that is the explanation of Dr. Atkinson's success as an operator, not only as a dentist, but as a surgeon. I have heard that when he was about to perform an operation in oral surgery, the first thing he would do would be to get the patient a cup of tea, sympathize with him, tell him that one good thing about an operation of that kind was that it didn't pain much, and in a short time bur out the necrosed bone, and the patient scarcely flinched at all and thought the operation a relief. Dr. Atkinson had a subliminal consciousness of wonderful power, and could control almost everybody around him. Many of us could not expect to meet with the success that he had, but if we study the subject carefully, and acquire the knowledge that is now available, I think we will have little trouble in successfully using it.

Not long ago a friend of mine had a patient, a young boy, that would faint dead away the moment his teeth were touched. Knowing something about what I had done in this line, he asked me if I could do anything with a case of that kind, and I told him to send the boy to me, and I would try. He was glad to get rid of him, and the boy came to me. The first time he felt quite faint. I did not want to hurry matters, so I made another appointment; the second visit he got along very well, the third time a little better, and the fourth time there was no trouble whatever, and I was able during the four sittings to do all the work necessary on his teeth.

Dishonest dentists are very few and far between,—certainly among the class who will be interested in this discussion. I do not believe there is any reason at all why we should not interest ourselves in the matter of hypnotic suggestion, and use it for the benefit of our patients,—in fact, I believe we have no right to refuse to investigate any appliance or method which will make it easier for our patients to undergo dental operations.

Dr. Stevens.—I will say just one word in regard to what Dr. Fillebrown has brought up,—that is, in regard to the question of having patients become unconscious at all. It seems to me there is a vast difference between giving an anæsthetic or a narcotic and

producing hypnotism. An anæsthetic can now be given without a person's knowledge or consent; hypnotism can be produced without their consent and sometimes without their knowledge. A person who has once been hypnotized can readily be brought under hypnotic influence again, and even at a distance.

Dr. Fillebrown.—Such cases are very rare.

Dr. Grant.—That is one point that I omitted, because I did not write the paper with any idea of influencing those who understood it not to use it, but merely to examine into its practical value to us. What Dr. Stevens has said is substantiated by every writer, friend or foe, on hypnotic suggestion. Of course, at the present day hypnotic suggestion is generally regarded as a perfectly possible thing, and almost every writer takes especial pains to speak of its dangers and to warn operators against them, even of careless suggestion, which is of course a lesser evil. And they all say that persons who can be hypnotized become more susceptible, and that they will obey even careless suggestions. Dr. Osgood, who has said more about it than any one around here, takes particular pains to say that he sometimes insures patients against the danger that he recognized they are liable to by saying to them in the hypnotic state, "No one but I can ever hypnotize you again." It does not seem necessary to take such precaution if he did not recognize the possibility of danger to the patient. Dr. Fillebrown is the only one who has written on the subject who does not admit that it is a dangerous influence to deal with; all the people who do it professionally agree upon that point.

President Smith.—I would like to ask some of you gentlemen who seem to understand this subject, if it is a conceded fact that if a person who produces this hypnotism on a patient should say to that person while in the hypnotic state, "You can never be hypnotized by any one but me," that the patient would not be susceptible to the influence of any other hypnotist?

Dr. Fillebrown.—That is true.

Dr. Grant.—Yes, it is a fact.

Dr. Fillebrown.—All our discussion about dangers will not hinder dishonest people from practising hypnotism. Again I say, is that any reason why we should refuse to give our patients the benefit of it in this mild form? These cases that have been mentioned here to-night are the extreme instances,—they are the one of a thousand. Charcot said that there was not more than one out of a thousand subjects that could be hypnotized without their knowledge or consent.

I will quote Professor William James; none will question his knowledge or familiarity with this subject. He told me himself that he thought it not dangerous to the patient, providing there were honest operators, this provision being necessary in the use of any remedy. I talked with him a little in regard to my use of it in professional life, and my teaching it to others, and asked if he would advise it, and he said, "Yes, by all means, do it." So you see there is a difference of opinion as regards the danger connected with it. I do know there is no unavoidable danger in it, and any one that refuses to use it is not giving his patients all the ease that is in his power to give them.

Dr. Stevens.—Of course, I agree with Dr. Fillebrown in this matter of hypnotic suggestion to a certain extent, but I do not think that Dr. Fillebrown has taken into consideration the full force of this matter,—I mean in those cases where the patient becomes unconscious, and I could relate two or three cases in point which will show the degree to which people are sometimes affected.

Some years ago, when I was a student, a young lady came into the office to have a tooth extracted. The lady was a stranger to me and wished to take gas. I took out the tooth and she came out of the gas apparently all right, and after she had rinsed the blood from her mouth, she lay back in her chair in a sleepy, semi-conscious condition. My preceptor was there at the time, and he felt of her pulse and said there was nothing to cause alarm, but she remained in this state for some little time, and when she finally came out of it, and got ready to go, my preceptor thought I had better go home with her. She lived out of town, but I got her home all right. I heard nothing from her until, two or three years afterwards, when I was in practice by myself, she came into my office with a friend. I performed an operation for the friend and she sat in the reception-room reading. Just before completing the operation I had occasion to step into the reception-room, and after a little conversation with her,—at which time she appeared all right,—I returned to my patient and finished what I was doing. Returning to the reception-room, we found her lying back in her chair in a state similar to that into which she relapsed on her first visit to me. I asked her friend if she knew whether "the lady had been hypnotized at any time," and was informed that she had been. I did not know how to restore her to consciousness. She sang us some "Trilby" songs and seemed to be quite comfortable, and unconcerned as to where she was. She missed the train they had intended to take, and as the time passed on I suggested in a

confident manner that she would be ready to take the next train (fervently hoping that she would), and sure enough she was all right in time. Now, what caused that hypnotic state? I knew nothing about hypnotism at the time, but I believe now my suggestion threw it off.

I have another case in mind. A lady, Mrs. B., an entire stranger to me, came into my office to have her teeth examined, and I found that one of the under teeth was beyond all help and needed to be extracted. When I finished the examination I noticed that she appeared to be sort of indifferent to what was going on, and she laid back in the chair with a rather absent-minded expression. I told her, "There is one tooth there which needs to be taken out." Without manifesting much interest in it, she said, "Take it out;" and I did so, without any pain to the patient. That was also before I knew anything about hypnotism, but I thought of this incident afterwards when she came again in the office, and the opportunity was given me to try an experiment. She had a bottle of tooth-powder, and when she put it down, she said to me, "Now, don't you let me forget that tooth-powder." I replied, earnestly, "You cannot pass without picking it up." A few days afterwards she came in and said, "Doctor, I wish you would fix matters up between me and that bottle of tooth-powder. I can't get by it without picking it up." I told her she would not be troubled any more, and she was not. I might add that she was one of that kind who always scouted the idea of being hypnotized, and thought any one was dreadfully weak-minded to allow themselves to be so influenced.

Dr. Grant.—I would like to ask Dr. Stevens if he took any pains to acquire the art of suggestion?

Dr. Stevens.—Never; except that I have read considerable about it of late years. I do not claim that that was any power of mine.

Dr. Grant.—The point I wanted to make was that it is claimed by some that people must have a special training—not only a medical training, but a special training in the science of hypnotism—to acquire the power of suggestion, but it is my belief that it exists in some people to an extraordinary degree. I had a talk with a man who has done quite a little in it, and I asked him that question especially,—whether he considered it an art or a gift. He said that he could not say; he had known men to acquire a slight degree of training, while others seemed to be able to exert a great deal of influence without giving the subject much thought or study.

Dr. Fillebrown.—The very fact of its being possible for one person to hypnotize another without their knowledge is an additional reason for every one understanding it. If Dr. Stevens had understood his own case, all that trouble would have been averted.

A lady was in my chair last Saturday, and we were speaking of hypnotism, and she told me of a young lady who, when she came into her presence, would go into an hypnotic trance. She did not know at first that she caused it; but she found it out finally, and when the young lady again became hypnotized, she remarked that she could take her out of it, and she went up to her and made some reverse passes and she immediately recovered her usual conditions. Now, this power exists, and it is a great deal better that we understand it. Such a case would not be found often enough to become a factor to be taken into consideration, but that it is sometimes possible is one of the strongest reasons why we should understand such conditions; they are forced upon us without our knowledge or consent.

I wish to say one word in regard to the appreciation of it by the profession at large and the increase of interest in this matter. My first account of my experiences in the use of it were published in the *Dental Review*. I had that article with me at the meeting of the American Association in August, 1893, and it was suggested that it be read as a volunteer paper, and the feeling in regard to it then in a committee was that the subject was not relevant, and they were quite unwilling that it should come before the Association. Mark the change that has taken place since. The next year a paper on the same subject was made one of the four that was read before the general meeting of the World's Dental Congress. At the meeting of the American Dental Association in 1894 the subject was not formally considered, but I was solicited to give a clinical talk upon the subject.

Thirty or more dentists gathered and listened, and among them were members of the committee who refused to consider it two years before. This summer I was at Asbury Park attending the meeting of the Association. Nothing was said about suggestion in the meeting, but the same request was made for a clinic, with similar results. The appreciation of it and the practice of it is steadily extending knowledge of its use and of the benefits derived from its interviews from every quarter of the globe. We must not be behind in the adoption of an adjunct which is of undoubted merit.

President Smith.—If the members do not care to speak further on this subject, I will ask Dr. Grant to close the discussion.

Dr. Grant.—The paper excited some of the discussion which I hoped it would bring up, but I am still of the opinion that after all there is something more in the mere theory of repose and confidence in the operator than we are apt to give credit for, and that this is sometimes mistaken for hypnotic suggestion, and I have not yet heard anything that changes my views of it. When we are masters of ourselves, we are, in a large measure, masters of our patients. I have been in practice now for twenty-five years, and I have this to say, that though I do not profess any power more than is possessed by any other man, I have yet to know of a patient leaving my office because I was unable to perform any operation that I undertook. It may have been good fortune to have had patients who could be handled without the aid of hypnotic suggestion; at any rate, all things considered, I think I have got along very well without attempting to use something whose effect is still uncertain and unknown.

THE annual meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, November 13, 1895.

Rev. Edwin H. Hughes delivered an address on "The Profession and the Man."

THE PROFESSION AND THE MAN.

BY REV. EDWIN H. HUGHES, NEWTON CENTRE, MASS.

MR. PRESIDENT AND GENTLEMEN,—A glance into a book a few years ago was rewarded by the interest of the following tradition, given now according to the memory of a hurried reading: There once dwelt in Hyderabad, India, a man whose name was Alhafed. One day there came to his fine country home a ministerial guest in the person of a Buddhist priest who gave to his host this crude account of the world's making: Back in the uncounted centuries, in the place of our revolving earth there was stationed a large, circular mass of thin vapor. In his own time the Almighty stretched forth his arm, placed his forefinger in the centre of this misty globe, and began to whirl it with infinite rapidity. The mighty circle became a flame and sped on in its fiery course. When the motion ceased the ball began to cool and contract. Mountains burst forth from its sides. The surrounding atmosphere rushed against it and depressed the surface, making beds for the oceans. According to the conditions of the cooling process rock was formed in one place, coal in another, and diamonds in a third. But Alhafed asked the priest what a diamond was. The stone was described and its value stated. "Where are diamonds found," was asked, with sparkling eyes. The answer was that the gems usually lay where a swift stream passed over white sand. Alhafed immediately became discontented. He sold his home and farm, collected his moneys, and started out in search of diamonds. He went from land to land, and after wanderings, long and vain, he stood at last upon the shores of Spain and gazed out over the waters of the Mediterranean. The sun shone upon the wave-crests and reminded him of the long-sought riches. Crazed with disappointment he cast himself into the sea, and his poor body was carried away through the rocks of Gibraltar. Meanwhile, the man to whom Alhafed had sold his farm toiled on industriously. One day as he worked in his garden he saw a shining stone in the sand of a little stream. He picked it up, carried it into his house, and placed it on a shelf. Shortly there

came to call the same Buddhist priest. He spied the precious stone in its carbon case, and excitedly asked, "Where did you get this?" The man led him forth to the garden stream, and stooping down the priest drew forth diamond after diamond. Alhafed's successor became fabulously rich; for he was the owner of the famous Golconda mines.

The untrustworthy legend gives a trustworthy moral. Men are ever leaving the ordinary with a view to finding the extraordinary. They do not expect to find diamonds while engaged in the plain pursuit of gardening. And very often in their proneness to consider the best things as distant and exceptional, they fail to gain the treasures that lie near at hand. Nor does this mistake confine itself simply to matters commercial and material. Supposing the weird story as history rather than as allegory, it is strictly true that the luckless Alhafed would have found more character as well as more wealth if he had not been seized with discontent of his occupation. And this moral view is the one which has point for us. For while it is not likely that some men of to-day will leave an honest profession and go in search of Captain Kidd's treasure or the casket at the rainbow's foot, we may yet be captured by the thought that the manhood for which we long and strive is to be gained and deepened only apart from the chosen work of our everyday lives. It therefore comes about that our calling sinks to the level of immoral drudgery or never rises, at the highest, above a petty commercialism. It is possible for a man to lose himself, his brain, his heart, his very soul, in his profession. It has been told as a matter of joking that somewhere in the Old World there is a tombstone with this inscription: "John Jones. Born a man; died a grocer." But, ridiculous as the odd epitaph may seem, it really suggests the record of too many lives. It is not at all beyond sober truth to say that some, born as men and with the possibilities of high manhood, have died simply grocers or preachers or dentists. The intense specialism of our time has its advantages as pointed out to you by abler men; yet this same specialism has its dangers. If there be intelligent persons who contend that men are made by circumstances, we may, while being unwilling to allow the fulness of their claim, still grant that it will be hard to get a broad spirit out of a narrow work.

It is singular and anomalous, however, that in this age of rigid specializing there should still be the loud demand for breadth. It is hopeful that this demand is made not only upon belief, but also upon conduct. The time was when whole areas of life were put

beyond the reach of morality. The edges of that dark period, sometimes even now, are seen amid the light of the present wider conscience. One—Mackenzie Wallace—says that in Russia such incidents as the following are still possible: A house-breaker, when in the act of robbing a church, finds it hard to extract the jewels from an image; he thereupon makes a vow that if a certain saint will assist him he will place a ruble's worth of candles before the saint's statue. A peasant prepared to rob a young man connected with the Austrian embassy in St. Petersburg. At length he kills his victim; but before doing so he enters a church and commends his bloody undertaking to the divine protection. A robber murders and rifles a traveller, but refuses to eat a piece of cooked meat, which he finds in the cart, because, indeed, it happened to be a fast-day. Extreme cases such as these will illustrate the efforts that have been made to mingle light and darkness and yet live in both. It was a distinct advance towards righteousness when it became the general verdict that a man's morality was the very essence of vanity and pretence, unless it kept him from outbreaching crimes. But our broadened thought now recognizes that this rule does not go far enough. It is at best simply negative. So there is at last heard a burning demand that the cheap and false distinction between things sacred and things secular shall be utterly wiped out; that men shall so use their constant work as to make it a means and expression of character; that the heart shall ever command obedience from the head and hand, and that no longer professionalism shall devour manhood. It is sure that this lofty and heroic ideal demands a large and serious purpose. No superficial person will reach it. If there is anything so sad as to see a man who could be big in intention and in heart, toying with some little work or movement, it is to see a little man taking hold of some great profession with a puny purpose. We need to come to our regular occupations with a thoughtful and humane spirit. There is too much tendency to regard our work as a grim necessity foisted upon life, as a punishing curse, as a rank intruder. But such a view needs to be banished. The thoughtful man will find enough of moral bearing and beauty in his calling to lift it out of the degradation of drudgery or commercialism, and to set it far on high.

There will be, first of all, the knowledge that his work stands for a genuine need of human life. It is a fact that sometimes we grow weary of this claim, especially when it comes from the mouths of men whom we suspect not to use it sincerely. The simpering agent who is out for the bread and butter purpose, who yet seeks

to invest his work with the purely benevolent and missionary air, often puts a heavy task upon our patience. But if hypocrisy be the tribute which vice pays to virtue, the protests of the insincere represent the attitude towards their employment that true men should seek to hold. For in truth every calling or profession stands for some necessity in life. There is no trade so humble as not to gain dignity from this view. The carpenter may say, It is absolutely necessary that people should have homes in which to dwell, wagons in which to travel, boats in which to sail, cars in which to ride, churches in which to worship. Viewing his work from the stand-point of its essential relation to life, the carpenter may rightfully claim that his occupation be somewhat exalted. The merchant may say, It is positively needful that people should be provided with eatables, with coal, with oil, with warm garments, with household conveniences. The mercantile calling represents, therefore, a plain and imperative need of the world, and should be held in high respect. The lawyer may say, The relations of men are not yet perfect. The organized life of society creates questions and crises. Rogues are alive and busy. Honest men are sometimes obstinate and unreasonable. The troubled world needs legal advice. Having such responsible duties, the legal profession should be given high regard. The doctor, whether of medicine or of dental surgery and science, may likewise make an impressive plea. He may say, There are many ills that flesh is heir to. People are suffering. Subtile disease is floating in the atmosphere. Both the prevention and the cure of aches and pains are constantly needed. The people must rely upon a quick eye, a knowing mind, a trained hand in order that their afflictions be relieved. Having for its object the preservation of health and the alleviation of physical woes, the medical profession should be assigned a high value. Now, all these claims are just and should be readily granted. He who holds in contempt any vital employment of life and casts discredit upon its followers has a false idea and is in sore need of moral enlightenment. It is not contended that man in the midst of the work which supplies his personal wants should be forever posing with the air of a philanthropist. That would scarcely be an honest attitude. The urgent needs that press upon each one of us, the needs of shelter, clothing, food, will afford a large and proper motive for professional activity. But it is insisted that a man should view his work as it relates to other men, and not simply as it relates to himself. And he who in selfish greed applies his powers to his daily tasks, and while grasping gold in payment never

considers that through the years he has been giving a good, safe contribution to life; that he has been sheltering bodies, satisfying hunger, defending the troubled, or relieving the suffering; he who fails to get this view of his tasks has all the while been becoming more of a professionalist and less of a man. The person who does not seek the utmost skill and buy the best instruments for his dental work, not only because he wishes to get larger prices, but also because he wishes to render better service to his customers, and to give an honest response to a need of human life, is most certainly sinking his manhood in his dentistry. It is surely not too much to ask that men come to their regular vocation in this generous spirit. The great poetess of England has some lines in which she teaches that the largeness of one's work will be determined by the individual purpose. Her statement is that it is better to be a tight-rope walker with a hearty thought than to be a poet with a superficial aim:

"I would rather dance
At fairs on tight rope, till the babies dropped
Their gingerbread for joy, than shift the types
For tolerable verse, intolerable
To men who act and suffer. Better far
Pursue a frivolous trade by serious means
Than a sublime art frivolously."

If, therefore, a man has an employment which is not frivolous, an employment which makes an essential part of our great and complex life, he needs to face it with moral pride and earnestness.

There is, moreover, a thought which will give a man's work height and aspiration just as this already stated will give it breadth and sympathy. Any true profession or work has a divine side. There is a large suggestiveness in certain portions of the religious history which we call the Bible,—suggestiveness for this particular point. Frequently it is represented that the call to the very highest life and leadership came to men as they were engaged in their ordinary pursuits. The call to the most majestic position as general, legislator, and ruler that ever came to man was received by one who was quietly tending his flocks upon the mountain-side. The first king of a mighty nation went out on a faithful search for his father's herds, and instead he found a kingdom. The shepherds who kept the quiet watch over the sheep on the Judean plains were the men who heard the thrilling advent song and gained the honor of the first worship. Matthew was busy at the table of the tax-

gathers when he was summoned to the discipleship that gave him immortal glory. John and James were engaged in the common occupation of fisherman when they heard the voice of authority, and pulled their boat over the blue waves to come ever nearer and nearer to Him who was to dominate the future. These incidental touches are suggestive. They mean, at the least, that the daily employment does not, need not, conceal the highest things from the worker. For it is not over-bold to say that to the reverent eye every vocation reveals things and powers which came from a divine agency. The carpenter handles wood which a power, not himself, has been a hundred years in making. The painter mixes colors which some power has driven across the ninety-two million miles from the sun and stored in metal and in planet. The drivers on our street-cars grasp the unseen force upon the upper and lower wires, and an invisible hand pushes the loads of busy men through the streets. There is no man whose work does not open up to him infinite distances, and who may not catch divine messages in the midst of his occupation. It was the thought of old Stradivarius, the violin-maker, that since a divine power had put the strange harmonies in the strings and cavities, he who so combined the conditions as to make the best instrument was in reality nothing less than a partner with the Infinite. It is no wonder that George Eliot, in her "Stradivarius," should exalt the man's dignified thought of his work. She represents the faithful artist as saying,—

"Who draws a line and satisfies his soul,
Making it crooked where it should be straight?
An idiot with an oyster-shell may draw
His lines upon the sand all wavering,
Fixing no point or pathway to a point;
An idiot one remove may choose his line,
Straggle and be content; but, God be praised,
Antonio Stradivari has an eye
That winces at false work and loves the true,
With hand and arm that play upon the tool
As willingly as any singing bird
Sets him to sing his morning roundelay,
Because he likes to sing and likes the song."

But his friend Naldo says,—

"'Tis a pretty kind of fame
At best that comes of making violins;
And saves no masses either. Thou wilt go
To purgatory none the less."

But Stradivarius replies,—

“ ’Twere purgatory here to make them ill;
And for my fame—when any master holds
’Twixt chin and hand a violin of mine,
He will be glad that Stradivari lived,
Made violins, and made them of the best.
The masters only know whose work is good;
They will choose mine; and while God gives them skill,
I give them instruments to play upon,
God choosing me to help Him.”

What reason is there to prevent every honest man who loves his profession, who thinks of it as responding to human needs, from having this noble thought of his work? When once we rise to such a view we are sure to lift our employments with us above either wearying drudgery or ambitious greed.

And as every profession has a human breadth and a divine height, so also does it have a personal point. By this it is not meant that a profession provides a man with food and shelter and other needed good. This it ought to do, and does do. But the meaning is that every man's employment relates itself vitally to the man's character. It is not at all the intention to engage now in any subtle and refined moral psychology. We will leave that task to the schools. Men, however, are far too likely to have a cheap thought of the influence which their professional activities shall have upon themselves. It would be a sad and disastrous view if we were driven to conclude that the things to which a man gives three-fourths or two-thirds of his conscious life were wholly immoral, so much so that the doing of them would in no real way contribute to his higher being. For many decades, Gladstone, the prime-minister of England, has engaged each week-day in chopping wood in the Hawarden forest. He has done this, not with the idea of supplying fire-wood for the castle, but rather with the idea of supplying himself with muscular power, so that he might meet the pressing demands of statesmanship. Now, it is simply incredible to think that the greatest statesman of the British empire receives a physical reflex influence from his work as a wood-chopper, and yet does not receive a mental and moral reflex influence from his profession as an official and reformer. There is a scientific doctrine of the persistence of force. And there is a sure doctrine of moral persistence. No man escapes from his own work. His profession refuses to be shaken off. It haunts him though unseen, dogs him though invisible, sleeps with him in the

darkness, and comes back to the next day's work to toil with him again. Yet this is not the ordinary view. At the end of a day's labor one man drops his hammer and nail-pouch and says, "Done." It is not true. The day's work is only begun. Another man drops his yard-stick and says, "Done." It is not true. The day's work is only begun. Another man puts down his forceps or mallet, stops his whirling wheel, dismisses his patient, and says, "It is done." But if it be true that the physical skill gained from the day's task is to reside henceforth in the man's arms and hands, it is safe to say that the moral influence of that work is to remain ever in the man's soul. There is a true and deep sense in which every man's employment stays with him perpetually. The work that we do on all lines will insist on continued association with our souls. And this view of one's occupation will redeem from wrong views as to failure. We may see the house which represents ten years of a man's work and saving go up in smoke and flame. We may cry out, "It is too bad! All the man's effort has been in vain." But that is a superficial view. It deals only with man as an animal. It allows no height, no breathing space. The most essential part of the ten years' work is in the man, in the patience, industry, honesty, keenness, love, that have day by day rebounded to his soul. Certainly this idea deepens one's thoughts of his profession, and delivers it forever from a cheap and temporary place in his life.

It must surely be, then, that these three conceptions of employment will set our daily work on high. To the man who comes to regard his profession as responding to human need, as fitting itself to divine co-operation, and as pushing its influence backward forever on his own soul, that profession will forever contribute to manhood, and will forever call the growing manhood to its service. It will thus be seen that the tribute which Mrs. Browning in her *Aurora Leigh* pays to the world's moral teachers is no piece of poetic extravagance:

"I write so

Of the only truth-tellers now left to God,
The only speakers of essential truth,
Opposed to relative, comparative,
And temporal truths; the only holders by
His sun-skirts, through conventional gray-glooms;
The only teachers who instruct mankind,
From just a shadow on a charnel-wall,
To find man's veritable status out
Erect, sublime,—the measure of a man;

And that's the measure of an angel, says
The apostle. Ay, and while your common men
Lay telegraphs, gauge railroads, reign, reap, dine,
And dust the flaunty carpets of the world
For kings to walk on, or our president,
The poet suddenly will catch them up
With his voice like a thunder,
'This is soul!
This is life, this word is being said in heaven.
Here's God down on us! what are you about?
How all those workers start amid their work
Look round, look up, and feel, a moment's space
That carpet dusting, though a pretty trade,
Is not the imperative labor after all.'"

THE regular monthly meeting of the American Academy of Dental Science was held at Young's Hotel, Boston, Wednesday, December 24, 1895, at 6 o'clock. A talk upon *Materia Medica* was given by Dr. E. C. Briggs, Boston.

A TALK ON MATERIA MEDICA.

BY DR. E. C. BRIGGS, BOSTON, MASS.

I am perfectly aware that a short time ago I read a paper on "The Dentist as a Prescriber of Drugs," in which I am opposed to the dentist going very much into the constitutional treatment of his patients. At the same time we do have to use drugs, not only locally, but at times systemically. I will begin with the first thing that I have jotted down, and that is, the preparation which I give patients as a soothing application. It is a mixture of equal parts of chloroform, laudanum, and tincture of camphor. That preparation is a stimulant and a slight anæsthetic.

A patient will come into your office complaining of some little trouble, some irritation or soreness of the gum, or some inflammation which it would be unwise to attempt to treat at the time, and for such cases I keep this mixture put up in a little vial; and when I think it is needed I tell the office girl to give the patient a bottle of "No. 3," as we call it. Now, that serves a double purpose: it is really very soothing in its effect, and it gives the patient something to do. That is one of the points I want to call your attention to,—the importance of doing something for the patient at such times when they are not quite ready for surgical treatment; when you are waiting, perhaps, for something to declare itself so that you can make a more clear diagnosis.

In cases where you have filled a root and the patient is threatened with some pain about the root of the tooth, perhaps periostitis or periodontitis, or pericementitis, I have found it necessary in many of those cases to prescribe for the patient some analgesic. In many of these, where it is impossible to do anything surgically, I find that I can do a great deal for patients by giving them some medicine; and of the analgesics which have proved to be not only safe in my hands, but of really great value, are the recent antipyretics that have been discovered,—the several petroleum preparations, acetanilide, phenacetin, etc. One of them, which I have used with marked success, is a proprietary

preparation, called "antikamnia." If any of you have never used it, I would recommend you trying it. It is an antipyretic and analgesic, and is composed of acetanilide, with bicarbonate of soda to render it more agreeable to the stomach, and caffeine, the tendency of which is to overcome any depressing effect which the acetanilide might have on the heart. The average dose is three grains, and four of these doses you will find will relieve and stop pain about the facial nerves; such, for instance, as toothache, periostitis; and do it far better than any amount of morphine, and will leave the patient in good condition for the next day. I have found that in giving morphine for toothache the patient must have so much of it to overcome this local pain as to be saturated with it, and to be made ill by it, and it takes a week sometimes to get over the effect, and in the majority of cases the pain has been but indifferently relieved by the drug.

Another drug that is very valuable to us is phenacetin, which is closely allied to the acetanilide which I spoke of, and they are both derived from phenol. This is also safe and very reliable in pains of the kind mentioned, and an excellent form in which to administer it is to give it with the citrate of caffeine.

The use of the hypodermic syringe is something that we are becoming more and more familiar with, and we must use it a great deal more in the future. Every man ought to familiarize himself and be accustomed to the use of the hypodermic syringe, so that he may be prepared for cases of collapse and other accidental conditions which may arise. I had a case a little while ago where a patient collapsed from shock, and associated with it was a tobacco heart, and he really seemed to be about to expire. It was a comfort to feel that with the hypodermic syringe I was able to inject brandy under his skin, for he was beyond the ability to swallow. One should be ready in such a case to inject brandy and water, or ammonia, as a heart stimulant; also atropine, and possibly nitro-glycerin. It is a great feeling of satisfaction to know that you were ready when the emergency presented.

The heart can also be reached by the use of nitrite of amyl. Sometimes you get cases of collapse, syncope, when you are using cocaine. I do not think that we often get collapse by cocaine-poisoning, I think it is almost always shock; but, of course, in that case you have to recognize that it may be possible that the cocaine is poisoning the patient, and the nitrite of amyl is a very excellent antidote for cocaine-poisoning. It is bought in these little glass capsules, and it is no skill or effort to prescribe one or to use one,

—you simply break it in a napkin and let the patient breathe it. It dilates the capillaries immediately and relieves congestion of the heart, and the circulation is re-established. Right in this connection it is well to speak again of the cases of tobacco heart, and I think we are getting a great many of them. The patient who is afflicted with tobacco heart is just as likely to die in your office as he is to die anywhere, and if there is a little shock, a sudden violent pain, he collapses; if he were somewhere else he probably would die when such a shock occurred. It is highly important that we should be ready to meet such an emergency, should it happen in our office, as it would be very embarrassing and distressing to have him die there.

Then the question of local anæsthesia is an important one,—the injection of weak solutions of cocaine submucously, subcutaneously, under the gum and skin. It is one of the greatest helps in practice. Take, for instance, the cases of pyorrhœa which need a very heroic treatment, and where, if the patient be not insensible to pain, in nine cases out of ten you will not do the treatment properly,—you cannot do it. Then in cases of opening into the antrum and in the many cases of abscess, local anæsthesia is of great assistance. Not long ago a patient came to me who had been suffering, walking the floor for three days and nights, with inflammation about the lateral. His dentist had told him he could do nothing for him, as he could not find the cause of it. I opened into the pulp-chamber and found it perfectly clear and free, but the man was suffering and the tooth was so sore and lame it could hardly be touched. Now, the injection of a little cocaine about the root of the tooth enabled me to drill through the foramen and to relieve him immediately of this terrible pain, which was caused by a very slowly-forming abscess. It ought to have been formed a couple of days before, but it had not, and there was no swelling to indicate that an abscess was forming. One, of course, could cite innumerable cases where pain has been relieved in this way. The solution of cocaine that I use is made from Schleich's formula,—viz.:

R Muriate of cocaine, 20 centigrammes;
Muriate of morphia, 25 milligrammes;
Chloride of sodium, 20 centigrammes;
Water, 100 grammes,

with a couple of drops of a 1 to 100 solution of carbolic acid.

You can even double the cocaine and still be very safe. Supposing you double it, it is only $\frac{4}{100}$ of one per cent., and yet that solution,

if injected, will enable you to work with great freedom. In the selection of a hypodermic syringe it is very important to get a very, very fine needle. That is where a great many men are intimidated and fail, and think that the use of the drug is as bad as the pain, and it is if you are going to punch in a great clumsy needle; but you can get fine needles which can be inserted with almost no pain.

Then this question of antiseptics is one which is agitating us all the time. I think we are getting over it a little; we are recovering from the germicide fever,—that idea that we have to put something into every case that is strong enough to kill every germ. I think that is struggling too much for one particular point. We must keep in mind that for the process of putrefaction there must be certain conditions: the germ must be present, and it is necessary to have air and the right condition of heat and of moisture. Now, if you take any one of those away you will stop the trouble. The devotion of our entire attention to simply one element of the ferment, the germ, has been carried almost too far,—so far, that the reaction has set in to the extent that some men profess not to use any antiseptics. This is fully as irrational as the use of the very powerful germicides. If we can in our operations employ proper antiseptics, mild ones, non-poisonous to the general system, why there can be no harm in making assurance doubly sure, but you must remember that if you have not a good bed for a germ it is not going to get in there.

One of the new drugs which you have heard of, and probably most of you have used, I thought I would speak about, because I have found it so very useful myself, and that is, trichloroacetic acid. When acetic acid is acted upon by chlorine, it yields three different combinations; the monochloroacetic acid, the dichloroacetic acid, and the trichloroacetic acid, and this trichloroacetic acid was discovered to have some special action as a tonic, astringent, and stimulant to the mucous surfaces, and it is also claimed—and I think with truth—to be decidedly effective in making it more easy to remove dental calculi, and it seems to me that in actual practice it has proved to be so; at any rate, it is very excellent in its tonic and stimulant effect on mucous surfaces. The nasal specialist has found it to be of value in the treatment of some of his most obstinate cases, and it is used in antral troubles, in different solutions, according to the case.

The uses of bicarbonate of soda I do not know that all of you appreciate. It is a very simple thing, and one of the beauties of it

is that it is so simple and safe that it can be put in the hands of the majority of patients without fear of it doing any harm. Obstinate cases of inflammation about the gum, with puffy, swollen membrane, will yield to this treatment, and the inflammation will subside. I have found it to do good work when other things have failed. It is used with very great benefit in cases of sensitiveness about the necks of the teeth. I have always been a great believer in bicarbonate of soda, and I like to commend it particularly to those who have not used it in the treatment of such cases as I have described.

A word or two about general anæsthetics. Of course, not all of us use anæsthetics, but still the progress in the use of the different agents for producing anæsthesia has been marked of late years, and the subject is of interest to us all. The importance of true anæsthesia is to be borne in mind, and that you do not want to carry it beyond that point. If you give an unlimited amount of any anæsthetic to a person and carry it to narcotism, you are doing only what you would do with any poisoning drug when you go beyond the prescribed dose. If you were administering opium and morphine, you would consider it extremely dangerous to give more than the maximum dose, and yet in the administration of anæsthetics an unlimited amount is provided without much thought of the true therapeutics, the true point to which they wish to carry the patient,—that is, anæsthesia without carrying it into narcotism.

Right here it is well to speak of the relations of chloroform and ether. Previous to the investigations of the Anglo-Indian Commission at Hyderabad, it was supposed that chloroform stopped the action of the heart first, and that ether was safer because it stopped the respiration first. This commission, of which Dr. Lauder Brunton was a member, found that chloroform acted on the respiration first, just as ether does; the only thing is that it is a more delicate drug; it does not take such a dose to produce the narcotic state, and, therefore, it has to be used more carefully.

Men who practise in a specialty of medicine ought to understand how to use drugs in a proper way which it is necessary for them to use in their specialty. I believe that later on we shall use chloroform a great deal more than we do now, and it would simplify matters a great deal; when there is a question as to what anæsthetic we should use, if we better understood the qualities and effects of chloroform. Statistics show that in only .0008 of one per cent. of cases where anæsthetics are administered are there deaths. Of

those, if we weed out the ones that are produced by careless overdosing, the ones who died from shock (which might have occurred from any shock), we have an exceedingly small percentage which we can apparently charge to anæsthetics themselves. Many of the fatalities which are credited to anæsthetics would, if investigated, be found due to other causes. One man in the autopsy was found to have had an abscess in the brain; others have been found far gone in kidney trouble and heart-disease,—and it simply was an accident that they should have died at that particular time. They were likely to die any minute, and as a matter of fact they died easily under an anæsthetic.

Dr. Keep, of Springfield, has lately made some researches in the use of anæsthetics, and he speaks very strongly about the ability to use chloroform if one uses it rightly, and he gives the dose of chloroform to be half an ounce at the outside. He sometimes combines it with ether, in which case he gives an ounce and a half of ether, but his dose of chloroform is only two drachms. He says that when properly administered complete anæsthesia can be obtained, and he fails to see how anybody who has not either one of these severe troubles, kidney, brain, or heart, could possibly suffer from that amount.

Dr. Louis Sayre, of New York, has used chloroform for years in five- to twenty-drop doses, and he has repeatedly asserted it was perfectly safe to use. His method is to give doses of from five to twenty drops and to exclude all air, except what was necessary to force the chloroform, and, carrying the patient quickly under this influence, performs his operation without causing the patient any pain.

DISCUSSION.

Dr. Bradley.—I have noted down one or two things that Dr. Briggs mentioned, and one is the use of bicarbonate of soda. I have used bicarbonate of soda for some time in cases of sensitiveness around the necks of teeth, but in some cases a patient would complain of a very severe pain when the soda was first applied, and so severe was this pain that the remedy was thought to be worse than the disease.

Within a short time a young lady came to me who had very sensitive cavities on the labial surface of the lower teeth, and as it was such a trial for her to have anything done I recommended that for several days she apply bicarbonate of soda to see if this sensitiveness could not be lessened. She tried it, and returned with the remark that she would prefer to have me excavate

the cavities as they were rather than apply bicarbonate of soda about the necks of her teeth. And I would like to ask the essayist if he has met with such cases and how he has dealt with them.

Where there is evidently periostitis, coming on after the filling of a pulpless tooth, I have prescribed a slight cathartic in the first stage, and if there is no beneficial effect from that, I have then prescribed a pill made of one grain of opium and two grains of camphor. I invariably divide the pill and give the patient one-half the quantity to be taken when in bed and prepared to go to sleep; if they are not asleep in one hour they must take the other half of the pill, and I must say that I have had very satisfactory results from the use of this opium and camphor pill. One case in which it worked admirably was that of a young boy, twelve years of age, in whose case it was necessary to devitalize a sixth-year molar. After treating the tooth I filled it, and apparently everything was satisfactory, and he was dismissed. The next day was a wet one and it seemed to strike him as a good day to go fishing. He came home thoroughly wet, with a sore throat as the first symptom, and during the night his tooth began to ache, and by morning a very severe periostitis had developed. I tried to subdue it by external applications, the capsicum plaster, etc., but nothing seemed to relieve him until I gave him this opium and camphor pill. I have not seen him since, but some of the members of the family say that he went to sleep that night and had no further trouble from the tooth.

I shall try the effects of antikamnia in my practice in cases of periostitis which I am unable to subdue by local applications.

Dr. Piper.—There is one product of coal-tar that Dr. Briggs did not refer to which I rather expected and hoped he would mention, and that is ammanol.

I have found it to work where the other sedatives did not seem to do much good. Not long ago I had a case of severe pericementitis, and I gave the patient phenacetin in five-grain doses, which she continued taking every half-hour until twenty grains had been taken, and was not relieved. When I saw her, the next day, she was in bed. I prescribed ammanol in ten-grain doses, and she afterwards told me that she seemed to be relieved almost immediately on taking it, and that the pain left in less than twenty minutes. It is probably phenacetin or acetanilide, combined with ammonia or some stimulant, and seems to be more safe to use than phenacetin alone, and the after-effect is more pleasant.

I have been so much pleased with the action of ammanol that I wish some one else would use it.

Dr. Cooke.—Perhaps Dr. Briggs would like to say something before we pass this subject.

Dr. Briggs.—I don't know that I have anything special to add to what I mentioned at first. In regard to the pain produced by the application of the bicarbonate of soda, spoken of by Dr. Bradley, of course it would not be wise to persist in the use of it; if you find it acts in that way, you have simply to do the best you can with the case as it is presented to you.

This ammanol is a combination of one of the products of coal-tar, all of which have a tendency to depress the circulation, with a stimulant which reduces the liability to danger and makes the drug more effective, and this is the result produced by combining caffeine with acetanilide in antikamnia. Ammonia with phenacetin in ammanol makes another happy combination.

The one point which I would like to emphasize is the improvement which you will be almost certain to attain in your treatment by splitting up your dose. If you know the dose to be a full one, I advise you to split it up, and I think almost all drugs, if a certain dose is what you want to give in twenty-four hours, will work very much better in every way, if you divide it up and spread it over the twenty-four hours in small doses, you do not lose the therapeutic effect and you do lose the toxic effect.

The original nitrous oxide effect was produced by stopping the supply of oxygen,—it was choking a man, so to speak, without preventing the elimination of the CO_2 , and for that reason has been claimed to be nothing but asphyxia.

I do not regard that as now tenable. I think that there is a true anæsthesia, and experiment will show that to be the effect. The compound oxygen preparations that are used for general tonic stimulants in cases of dynamic fevers, heart-failures, etc., are, most of them, combinations of nitrous oxide with oxygen, and they can, all of them, I think, be taken with considerable anæsthetic effect. I tried a compound oxygen preparation a very short time ago, and two long breaths made me nearer complete anæsthesia than I have ever been with chloroform in quite a good-sized dose, and more so than I have ever been able to get with bromide of ethyl on myself. I am not a very strong advocate of the bromide of ethyl; I have not found it very reliable. Some patients would go into the anæsthesia very quickly and nicely, while with others I could not seem to manage to obtain a satisfactory degree.

That was one of those drugs which fell into discredit because of extraneous circumstances connected with cases in which it was administered. Two prominent surgeons used it and had a death. Dr. Levis, in Philadelphia, gave it to a patient who had pulmonary trouble, and the patient died; he called it the effect of bromide of ethyl; J. Marion Sims had one of those long, trying operations on the uterus, and the patient died several hours after the operation, and that was attributed to the bromide of ethyl, consequently it was discredited, and has never been very highly regarded by the profession on account of these accidents, which were really no fault of the drug itself. This ought to bring prominently before us the importance of great care in giving a drug for the production of anæsthesia. If you give it in a definite dose as you would any other medicine, there is no reason why one should not get the result which repeated experiments have shown to be the effect of such a dose. You would not expect to throw a gallon of a thing at a man, and that he would absorb just what was good for him and no more.

It has been just this carelessness in the matter of the dose of these petroleum compounds that has discredited them: antipyrin was given in twenty-grain doses until injurious effects were reported from several different quarters; but when they reduced the dose it was found to work satisfactorily. Chloral was first used recklessly, and several fatalities resulted before the dose was brought down to what it should be, and so I think that it is better to try a small dose first and perhaps repeat it rather than give a maximum dose and expect that a man will absorb only what is good for him.

I do not know how the society stands on the subject of anæsthesia. We had a controversy a while ago in which the claims of the two aspirants for the honor of its discovery were presented by their friends, but I do not know who established the strongest claim. I thought I would simply state to the society that I know where there is an oil portrait of Dr. Horace Wells, probably the only one in existence. It was painted at the time he was living in Hartford, and I do not know the circumstances, but rather think that the sitting was secured and the picture bought by some friend of the family, and it would seem as though it ought to be in the possession of the society on account of the strong claims that he had to being the discoverer of anæsthesia. I speak of it simply to put it on record that there is such a portrait in existence, and that it can be bought.

Under the head of "Presentation of Specimens," a model of an automatic mallet, which was something of a novelty, was presented by Dr. Belyea. It was really two mallets in one, both ends being utilized, and, in addition to that, each of the mallets had a direct action and a back action. Of course, the direct action and the back action cannot be used at the same time, but there are times when the back action is much wanted. The chief advantage of the instrument is the time saved in changing points.

WILLIAM H. POTTER, D. M. D.,
Editor American Academy Dental Science.

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